Mathletics

Alberta Program of Studies

Understanding Practice and Fluency (UPF)

Grades 3 – 6

September, 2021

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Contents

Part I

Grade 3

1 Number

1.1 Develop number sense.

1. Say the number sequence 0 to 1000 forward and backward by: 5s, 10s or 100s, using any starting point, 3s, using starting points that are multiples of 3, 4s, using starting points that are multiples of 4, 25s, using starting points that are multiples of 25.			
Quest: Count to 1000			
Learning Journey	Steps	Content	Description
Counting by 5s to 1000, forward & backward	1	Counting by skip counting forward by 5s from any multiple of 5 to 1000	• use concrete materials, models, drawings, number lines/charts to skip count forward by 5s from any multiple of 5 up to 1000
			• skip count forward by 5s from any multiple of 5 by memory and an understanding of the number sequence
			• recognize an error in the skip counting sequence
	2	Counting by skip counting backward by 5s from any multiple of 5 up to 1000	• use concrete materials, models, drawings, number lines/charts to skip count backward by 5s from any multiple of 5 up to 1000
			• skip count backward by 5s from any multiple of 5 by memory and an understanding of the number sequence
			• recognize an error in the skip counting sequence
	3	Counting by skip counting forward or backward by 5s from any number up to 1000	• use concrete materials, models, drawings, number lines/charts to skip count forward or backward by 5s from any number up to 1000
			• skip count forward or backward by 5s from any multiple of 5 by memory and an understanding of the number sequence
			• recognize an error in the skip counting sequence
Counting by 10s to 1000, forward & backward	1	Counting by skip counting forward by 10s from any multiple of 10 to 1000	• use concrete materials, models, drawings, number lines/charts to skip count forward by 10s from any multiple of 10 up to 1000
			• skip count forward by 10s from any multiple of 10 by memory and an understanding of the number sequence
			• recognize an error in the skip counting sequence

Learning Journey	Step	Content	Description
	2	Counting by skip counting backward by 10s from any multiple of 10 up to 1000	• use concrete materials, models, drawings, number lines/charts to skip count backward by 10s from any multiple of 10 up to 1000
			• skip count backward by 10s from any multiple of 10 by memory and an understanding of the number sequence
			• recognize an error in the skip counting sequence
	3	Counting by skip counting forward or backward by 10s from any number up to 1000	• use concrete materials, models, drawings, number lines/charts to skip count forward or backward by 10s from any number up to 1000
			• skip count forward or backward by 10s from any number using understanding of the number sequence and place value
			• recognize an error in the skip counting sequence
Counting by 100s to 1000, forward & backward	1	Counting by skip counting forward by 100s from any number up to 1000	• use concrete materials, models, drawings, number lines/charts to skip count forward by 100s from any number up to 1000
			• skip count forward by 100s from any number using understanding of the number sequence and place value
			• recognize an error in the skip counting sequence
	2	Counting by skip counting backward by 100s from any number within 1000	• use concrete materials, models, drawings, number lines/charts to skip count backward by 100s from any number within 1000
			• skip count backward by 100s from any number by memory and an understanding of the number sequence
			• recognize an error in the skip counting sequence
Counting by 1s to 1000	1	Counting forward in ones within 1000	• count forward in ones between 100 and 1000, starting from any number
			• identify missing numbers in the hundreds on a number line up to 1000
	2	Counting backward in ones within 1000	• count backward in ones between 100 and 1000, starting from any number
			• identify missing numbers in the hundreds on a number line up to 1000
	3	Counting forward and backward in ones within 1000	• count forward and backward in ones between 100 and 1000, starting from any number

Learning Journey	Step	Content	Description
			• identify missing numbers in the hundreds on a number line up to 1000
Skip counting by 3s	1	Counting by skip counting forward by 3s from any multiple of 3 up to 1000	• 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
			• recognize an error in the skip counting sequence
	2	Counting by skip counting backward by 3s from any multiple of 3 from 1000	• use concrete materials, models, drawings, number lines/charts, to skip count backward by 3s
			• use knowledge of the number sequence to count backward in 3s from any multiple of 3
			• recognize an error in the skip counting sequence
	3	Counting by skip counting forward or backward by 3s from any multiple of 3 from zero to 1000	• use concrete materials, models, drawings, number lines/charts, to skip count by 3s
			• use knowledge of the number sequence to count forward or backward in 3s from any multiple of 3
			• recognize an error in the skip counting sequence
Skip counting by 4s	1	Counting by skip counting forward by 4s from any multiple of 4 up to 1000	• use concrete materials, models, drawings, number lines/charts, to skip count by 4s from any multiple of 4
			• use knowledge of the number sequence to count in 4s from any multiple of 4
			• recognize an error in the skip counting sequence
	2	Counting by skip counting backward by 4s from any multiple of 4 from 1000	• use concrete materials, models, drawings, number lines/charts, to skip count backward by 4s
			• use knowledge of the number sequence to count backward in 4s from any multiple of 4
			• recognize an error in the skip counting sequence
	3	Counting by skip counting forward or backward by 4s from any multiple of 4 from zero to 1000	• use concrete materials, models, drawings, number lines/charts, to skip count by 4s
			• use knowledge of the number sequence to count forward or backward in 4s from any multiple of 4
			• recognize an error in the skip counting sequence

Learning Journey	Step	Content	Description
Skip counting by 25s	1	Counting by skip counting forward and backward by 25s from any multiple of 25 to 1000	• use concrete materials, models, drawings, number lines/charts to skip count forward and backward by 25s from any multiple of 25 up to 1000
			• skip count forward by 25s from any multiple of 25 by memory and an understanding of the number sequence
			• recognize an error in the skip counting sequence

2. Represent and describe numbers to 1000, concretely, pictorially and symbolically.			
Quest: Represent & describe numbers to 1000			
Learning Journey	Steps	Content	Description
Representing & describing numbers to 1000	1	Reading and writing 3-digit numbers using numbers only	• read a given 3-digit number in words, e.g., 456 says 'four hundred fifty-six'
			• write the numbers for a 3-digit number given verbally in words
	2	Reading and writing 3-digit numbers using words and numbers	• write a given 3-digit number in words, e.g., 456 as four hundred fifty-six
			• write the numbers for a 3-digit number given in words
	3	Representing 3-digit numbers using words, numbers, and objects	• model a given 3-digit number using concrete materials, pictures, or drawings
			• write the numbers and words, e.g., 'two hundred fifty-three' for a 3-digit number represented using place value manipulatives or using pictures and drawings
Connecting multiples of 10 & 100 to number words	1	Connecting multiples of 10 and 100 to their number words	• connect multiples of 10 to their number words up to 90
			• connect multiples of 100 to their number words up to 900

3. Compare and order numbers to 1000.			
Quest: Compare & order numbers to 1000			
Learning Journey	Steps	Content	Description
Identifying numbers before & after within 1000	1	Identifying numbers before and after within 1000	• identify the number that comes after a given 3-digit number up to 1000; describe this number as 'one more than'
			• identify the number that comes before a given 3-digit number up to 1000; describe this number as 'one less than'

Learning Journey	Step	Content	Description
			• identify the number that comes after or before a given 3-digit number up to 1000; describe this number as 'one more than' or 'one less than'
	2	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
	3	Identifying numbers in parts of a given hundreds chart up to 1000	• identify missing numbers in parts of a given hundred chart up to 1000
			• identify errors in parts of a given hundred chart up to 1000
Comparing numbers to 1000	1	Comparing numbers to 1000	• model and compare two 3-digit numbers using place value equipment
			• compare two 3-digit numbers; describe as 'more than' or 'less than', 'smaller than', greater than'
	2	Comparing 3-digit numbers represented by models	• compare two numbers shown as place value objects and record using inequality symbols eg, Base 10, place value counters, part–whole models
	3	Comparing numbers to 1000 using <, = and > symbols	• model and compare two 3-digit numbers using place value equipment
			• compare two 3-digit numerals using <, = and > symbols
Ordering numbers to 1000	1	Ordering numbers to 1000	• order up to 4 consecutive numbers within 1000 in ascending order or descending order; explain the reason for the order given
			• order up to 4 non-consecutive numbers within 1000 in ascending order; explain the reason for the order given

4. Estimate quantities less than 1000, using referents.			
Quest: Estimate quantities less than 1000			
Learning Journey	Steps	Content	Description
Estimating quantities using referents	1	Estimating a given quantity up to 1000 using 10 or 100 as a referent	• estimate a given quantity up to 1000 using 10 as a referent where 3 possible choices are given
			• estimate a given quantity up to 1000 using 100 as a referent where 3 possible choices are given
	2	Selecting and justifying a referent for determining an estimate for a given quantity up to 1000	• select and justify a referent for determining an estimate for a given quantity

5. Illustrate, concretely and pictorially, the meaning of place value for numerals to 1000.			
Quest: Place value of numbers up to 1000			
Learning Journey	Steps	Content	Description
Identifying place value of numbers to 1000	1	Identifying the place value of digits in 3-digit numbers	• write the number for a 3-digit number modelled using place value manipulatives
			• identify the digit in the hundreds, tens, or ones column for a given 3-digit number
			• recognize that the value of the digit is determined by its place value, e.g., in 689 the digit 8 has a place value of tens and a total value of 80
			• identify, record, and model a number using place value clues, e.g., 'a 5 in the hundreds and a 2 in the ones' as 502
			• recognize the role of zero as a placeholder
			• create the smallest and largest numbers possible using 3 digits
Using place value to partition 3-digit numbers	1	Using place value to partition 3-digit numbers	• use place value manipulatives to partition a given 3-digit number into hundreds, tens, and ones
			• describe a 3-digit number using words, e.g., 523 as '5 hundreds, 2 tens, and 3 ones'
			• write a 3-digit number in expanded form, e.g., 523 as 500 + 20 + 3
			• write the number for a number represented by expanded form
			• recognize zero as a placeholder
Non-standard partitioning, 3-digit numbers	1	Partitioning 3-digit numbers using non-standard partitioning	• use place value equipment to partition a given 3-digit number using non-standard partitioning, eg 375 as 2 hundreds and 175 ones or 200 + 175
			• model and identify a number from non-standard partitioning, eg recognize 3 hundreds, 4 tens and 27 ones or 300 + 40 + 27 as 367
Solving place value number problems	1	Solving problems using 3-digit numbers	• identify the smallest or largest number that can be made from 3 digits, e.g., given 1, 7 and 3, recognize that 731 is the largest number; explain reasoning
			• identify a 3-digit number using given clues, e.g., 'the digit in the ones place is odd' or 'the number is between 500 and 700'
			• write clues for others to identify a 3-digit number

6. Describe and apply mental mathematics strategies for adding two 2-digit numerals.			
Quest: Add 2-digit numbers, mental strategies			
Learning Journey	Steps	Content	Description
Adding 2-digit numbers, jump strategy	1	Introducing the addition of two 2-digit numbers using place value partitioning on a number line (jump strategy)	• use an empty number line to model and solve the addition of two 2-digit numbers, eg solve 35 + 43 as 35 + 10 + 10 + 10 + 10 = 75 then 75 + 1 + 1 + 1 = 78 (max sum 100)
			• record and explain the use of the strategy
	2	Adding two 2-digit numbers using place value partitioning on a number line (jump strategy)	• use an empty number line to model and solve the addition of two 2-digit numbers, eg solve 35 + 43 as 35 + 40 = 75 then 75 + 3 = 78
			• record and explain the use of the strategy
Adding 2-digit numbers, split strategy	1	Adding tens and ones using place value equipment and a split strategy (no crossing tens)	• model and solve the addition of two 2-digit numbers represented horizontally using place value equipment (not crossing ten), eg use base 10 blocks to model 34 + 12 as 30 + 10 and 4 + 2 (max sum 100)
			• record and explain the use of the strategy
	2	Adding two 2-digit numbers using place value models (split strategy)	• use place value equipment to model and solve the addition of two 2-digit numbers using standard partitioning, eg 37 + 45 as 30 + 40 and 5 + 7
			• explain the use of a split strategy using informal recordings
Adding 2-digit numbers, bridge to ten	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
Adding 2-digit numbers, using place value	1	Adding two 2-digit numbers vertically using place value equipment (no regrouping)	• add two 2-digit numbers vertically using place value equipment (no regrouping)
Adding 2-digit numbers, rounding & compensating	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

Learning Journey	Step	Content	Description
Adding tens to a 2-digit number, models	1	Adding tens to a 2-digit number using models and/or equipment for support	• add ten and multiples of ten to a given 2-digit number, eg 36 + 20 = 56 (max sum 100)

7. Describe and apply mental mathematics strategies for subtracting two 2-digit numerals.			
Quest: Subtract 2-digit numbers, mental methods			
Learning Journey	Steps	Content	Description
Subtracting 2-digit numbers, jump strategy	1	Introducing subtraction of two 2-digit numbers using place value partitioning on a number line (jump strategy)	• use an empty number line to model and solve the subtraction of two 2-digit numbers by counting back, eg solve 52 – 23 as 52 – 10 – 10 = 32 then 32 – 1 – 1 – 1 = 29 (max sum 100)
			• record and explain the use of the strategy
	2	Subtracting two 2-digit numbers using place value partitioning on a number line (jump strategy)	• use an empty number line to model and solve the subtraction of two 2-digit numbers by counting back, eg solve 52 – 23 as 52 – 20 = 32 then 32 – 3 = 29 (max sum 100)
			• record and explain the use of the strategy
Subtracting 2-digit numbers, split strategy	1	Subtracting tens and ones using place value equipment and a split strategy (no crossing tens)	• model and solve the subtraction of two 2-digit numbers represented horizontally using place value equipment (not crossing ten), eg use base 10 blocks to model 34 – 12 as 30 – 10 and 4 – 2
			• record and explain the use of the strategy
Subtracting 2-digit numbers, bridging to ten	1	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-digit numbers, round & compensate	1	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 tens from a 2-digit number, models	1	Subtracting tens from a 2-digit number using models and/or equipment for support	• subtract ten and multiples of ten to a given 2-digit number, eg 36 - 20 = 16 (max sum 100)

8. Apply estimation strategies to predict sums and differences of two 2-digit numerals in a problem-solving context.			
Quest: Estimate - two 2-digit number problems			
Learning Journey	Steps	Content	Description
Estimating with two 2-digit number problems	1	Estimating addition and subtraction of two 2-digit numbers in a problem solving context	• round numbers to the nearest 10 to estimate addition in a problem solving context, eg 46 + 38 as 50 + 40 in a problem solving context
			• round numbers to the nearest 10 to estimate subtraction in a problem solving context eg 86 – 38 as 90 – 40 in a problem solving context

9. Demonstrate an understanding of addition and subtraction of numbers with answers to 1000 (limited to 1-, 2-and 3-digit numerals), concretely, pictorially and symbolically, by: using personal strategies for adding and subtracting with and without the support of manipulatives, creating and solving problems in context that involve addition and subtraction of numbers.			
Quest: Addition & subtraction to 1000			
Learning Journey	Steps	Content	Description
Adding up to 1000 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	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
	3	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
Adding up to 1000 using bridging to ten	1	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
Adding up to 1000 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 manipulatives, money, or diagrams
			• solve addition problems using a split strategy, e.g., 265 + 27 as 260 + 20 and 5 + 7, 280 + 12 = 292

Learning Journey	Step	Content	Description
			• record and explain the use of the strategy
Adding up to 1000 using rounding & compensating	1	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)
			• 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
			• record the strategy using numerals, models and/or diagrams and explain the need to compensate
Adding up to 1000 using formal algorithm	1	Using a formal written algorithm and models for addition calculations of 2 three-digit numbers (no regrouping)	• add two 3-digit numbers using models, eg base 10, part-whole models, bar models
	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 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
Subtracting up to 1000 using jump strategy	1	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
	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

Learning Journey	Step	Content	Description
	3	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
Subtracting up to 1000 using split strategy	1	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
	2	Subtracting two 3-digit numbers mentally using place value understanding (split strategy)	• solve subtraction problems using a split strategy, eg 548 – 127 as 500 – 100 and 40 – 20 and 8 – 7, 400 + 20 + 1 = 421
			• record and explain the strategy using numerals, models and/or diagrams
Subtracting up to 1000 using bridging to ten	1	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
Subtracting up to 1000 - rounding & compensating	1	Subtracting up to two 3-digit numbers using rounding and compensating	• 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
Subtracting up to 1000 using formal algorithm	1	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

Learning Journey	Step	Content	Description
			• 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 (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
Adding & subtracting to 1000 using jump strategy	1	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
Adding & subtracting to 1000 using split strategy	1	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
Representing add/subtract problems using 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?'

Learning Journey	Step	Content	Description
			• 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?'
			• 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
Solving addition & subtraction word problems	1	Creating and solving addition and subtraction word problems (within 1000)	• represent a word problem as an addition or subtraction number sentence
			• 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

10. Apply mental mathematics strategies and number properties in order to understand and recall basic addition facts and related subtraction facts to 18.			
Quest: Mental strategies - add/sub facts to 18			
Learning Journey	Steps	Content	Description
Using the commutative property of addition	1	Using the commutative property of addition (up to 18)	• represent and solve an addition problem both ways using concrete materials and models eg 5 + 4 or 4 + 5
			• swap an addition problem around so the larger number comes first and add (within 18)
Adding 3 single-digit numbers to 18	1	Adding 3 single-digit numbers	• use appropriate strategies to add 3 single-digit numbers; including changing the order, doubles if appropriate, bridging to a ten
			• explain and justify strategies used
Finding the difference between 2 numbers	1	Finding the difference between 2 numbers (up to 18)	• represent two numbers using concrete materials and a number line eg place value equipment and a number line; compare the materials and count from the smaller number to find the difference
			• find the missing number in an addition problem eg 4 + ? = 9
			• solve word problems which involve finding the difference between two numbers
Using doubles & near doubles to add & subtract	1	Adding doubles or near doubles (up to 18)	• solve addition problems using doubles, eg 4 + 3 + 4 as 4 + 4 + 3.
			• model and solve addition problems with near doubles, eg 5 + 7 as 5 + 5 + 2 = 12.
	2	Subtracting using doubles	• model and solve subtraction problems using doubles, eg 14 - 7 as 7 + 7 = 14 or 15 - 8 as 7 + 7 + 1 = 15
	3	Adding near doubles including where both addends change (up to 18)	• model and solve addition problems with near doubles, eg 6 + 7 as 6 + 6 + 1= 13.
			• model and solve addition problems using near doubles where both addends change, eg 5 + 7 as 6 + 6 = 12
Mental strategies for addition & subtraction facts	1	Describing and using mental strategies for basic addition and related subtraction facts to 18	• describe and use mental strategies to solve addition and subtraction facts to 18
Adding & subtracting zero	1	Adding and subtracting zero (up to 18)	• investigate and recognize the effect of adding zero to a number; generalize that adding zero does not change the number

Learning Journey	Step	Content	Description
			• investigate and recognize the effect of subtracting zero from a number; generalize that subtracting zero does not change the number

11. Demonstrate an understanding of multiplication to 5 × 5 by: representing and explaining multiplication using equal grouping and arrays, creating and solving problems in context that involve multiplication, modelling multiplication using concrete and visual representations, and recording the process symbolically, relating multiplication to repeated addition, relating multiplication to division.			
Quest: Multiplication concepts to 5 x 5			
Learning Journey	Steps	Content	Description
Using repeated addition to multiply	1	Using repeated addition with arrays (2, 3, 4, 5)	• solve simple multiplication problems represented in arrays by using repeated addition (up to 25)
			• represent and solve simple multiplication problems represented in arrays by using repeated addition
			• describe using, eg '_groups of _ is the same as _ + _ + _'
Exploring multiplication by 2	1	Exploring multiplication by 2 (up to 5 x 2)	• relate multiplication by 2 to doubles; model and describe, eg '2 groups of 4 is the same as double 4'; recognize that the result of multiplying by 2 is an even number
			• use the multiplication symbol when describing and solving multiplication problems
			• explore patterns of the 2 multiplication facts on a number chart
			• show the 2 related multiplication facts, eg 3 x 2 and 2 x 3
Exploring multiplication by 3	1	Exploring multiplication by 3 (up to 5 x 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
			• show the 2 related multiplication facts, eg 5 x 3 and 3 x 5
Exploring multiplication by 4	1	Exploring multiplication by 4 (up to 5 x 4)	• relate multiplication by 4 to double multiplication by 2
			• explore patterns of the multiplication facts for 4 on a number chart
			• show the 2 related multiplication facts, eg 5 x 4 and 4 x 5
Exploring multiplication by 5	1	Exploring multiplication by 5 (up to 5 x 5)	• use the multiplication symbol when describing and solving multiplication problems
			• explore patterns of the 5 multiplication facts on a number chart

Learning Journey	Step	Content	Description
			• show the 2 related multiplication facts, eg 3 x 5 and 5 x 3
Multiplication facts to 5 x 5	1	Recalling multiplication facts to 5 x 5	• recall multiplication facts to 5 x 5

12. Demonstrate an understanding of division (limited to division related to multiplication facts up to 5 x 5) by: representing and explaining division using equal sharing and equal grouping, creating and solving problems in context that involve equal sharing and equal grouping, modelling equal sharing and equal grouping using concrete and visual representations, and recording the process symbolically, relating division to repeated subtraction, relating division to multiplication.			
Quest: Division concepts (up to 5 x 5 facts)			
Learning Journey	Steps	Content	Description
Using repeated subtraction to divide	1	Using repeated subtraction to divide (2, 3, 4, 5)	• solve division problems (group size known, number of groups unknown) using repeated subtraction and concrete materials, models or drawings of groups or arrays
			• use an empty number line or number chart to represent division problems as repeated subtraction (group size known ... number of groups unknown)
Dividing by 2	1	Dividing by 2 (up to 10 divided by 2)	• relate division by 2 to halves and model and describe, eg '6 divided by 2 is the same as finding half of 6'
			• recognize that when halving an odd number you will always have one left over
			• use the division symbol when describing and solving division problems
			• model and describe the related 2 multiplication and division facts, eg 8 ÷ 2 = 4 and 2 x 4 = 8
Dividing by 3	1	Dividing by 3 (up to 15 divided by 3)	• model and describe the related 3 multiplication and division facts, eg 15 ÷ 3 = 5 and 3 x 5 = 15
			• relate division to how many (whole) times the divisor goes into the dividend
Dividing by 4	1	Dividing by 4 (up to 20 divided by 4)	• model and describe the related multiplication and division facts for 4 using models, drawings or manipulatives, eg 12 ÷ 4 = 3 and 4 x 3 = 12
			• relate division to how many (whole) times the divisor goes into the dividend
Dividing by 5	1	Dividing by 5 (up to 25 divided by 5)	• use the division symbol when describing and solving division problems
			• model and describe the related 5 multiplication and division facts, eg 15 ÷ 5 = 3 and 5 x 3 = 15

Quest: Relating multiplication & division			
Learning Journey	Steps	Content	Description
Modelling multiplication & division relationship	1	Modelling the relationship between multiplication and division (up to 5 x 5)	• use concrete materials or drawings to model the relationship between multiplication and division, eg '2 groups of 3 make 6 or 6 put into 2 groups equals 3'
			• use reversing to rewrite division statements as multiplication statements
Solving problems using arrays	1	Solving multiplication and division problems involving arrays (within 25)	• 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
Multiplication & division word problems	1	Interpreting and solving multiplication and division word problems (2, 5, 3, 4)	• interpret a multiplication word problem by forming the factors and then solve using known multiplication facts
			• interpret a division word problem by forming the factors and then solve using known division facts
			• interpret and solve a multiplication word problem using repeated addition when a multiplication fact is not known
			• interpret and solve a division word problem using repeated addition or skip counting when a division fact is not known

13. Demonstrate an understanding of fractions by: explaining that a fraction represents a part of a whole, describing situations in which fractions are used, comparing fractions of the same whole that have like denominators.			
Quest: Fraction concepts			
Learning Journey	Steps	Content	Description
Finding halves	1	Finding half of a set or quantity (symbols used)	• find half of a set using equal sharing
			• find halves of quantities (up to 10)
			• find the whole from one half
			• describe using 'one half' or 'two halves' or 'halves'
			• use the symbols to represent the fraction $\frac{1}{2}$
Finding fourths	1	Introducing fourths of objects, sets or shapes (symbols used)	• recognize objects, shapes or set shared into 4 equal parts; recognize that the same shape or object can be shared into 4 parts in different ways

Learning Journey	Step	Content	Description
			• find $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of objects, shapes, lengths or sets
			• find the whole given fourths(s)
			• relate fourths to everyday life
			• use language 'one fourth', 'two fourths' and so on
			• use symbols to represent fractions: $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, $\frac{4}{4}$
			• record fourths of sets as a number sentence, e.g., $\frac{1}{4}$ of 12 = 3
Working with halves & fourths	1	Finding halves and fourths of objects, shapes or sets (symbols used)	• find halves and fourths of objects and shapes
			• find halves and fourths of sets
			• find the whole from a part
			• find halves and fourths of uneven partitioned shapes
			• use language 'one half', 'two halves', 'one fourth', 'two fourths' 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	Recognizing equivalence between halves and fourths of objects, shapes or sets up to 1 (symbols used)	• relate halves and fourths and know that $\frac{1}{2}$ is the same as $\frac{2}{4}$
			• know that there are 2 fourths in 1 half
			• show equivalent halves and fourths using concrete materials and models.
	3	Finding halves and fourths of linear models or sets (symbols used)	• find halves and fourths of objects and shapes
			• find halves and fourths of sets
			• find the whole from a part
			• find halves and fourths of uneven partitioned shapes
			• use language 'one half', 'two halves', 'one fourth', 'two fourths' and so on
			• use symbols to represent fractions: $\frac{1}{2}$, $\frac{2}{2}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, $\frac{4}{4}$
	4	Counting in halves and fourths up to 1 using models (symbols used)	• count in halves and fourths with concrete objects, models and shapes
			• count in halves and fourths with sets
			• recognize equivalence
			• describe as 'one fourth', 'two fourths' and so on
			• use symbols to represent fractions for halves and fourths
Working with thirds	1	Introducing thirds	• find thirds of objects, shapes and lengths
			• find thirds 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 third', 'two thirds', 'three thirds'
			• use symbols to represent: $\frac{1}{3}$, $\frac{2}{3}$, $\frac{3}{3}$
	2	Finding thirds of quantities up to 18	• use models and/or concrete objects to support finding thirds of quantities, including finding $\frac{1}{3}$, $\frac{2}{3}$, $\frac{3}{3}$
			• relate finding thirds to repeated addition
			• record as a number sentence, eg $\frac{1}{3}$ of 9 = 3
	3	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)
Working with sixths	1	Introducing sixths	• find sixths of objects and shapes
			• find sixths 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 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
Working with thirds & sixths	1	Finding thirds and sixths of objects, shapes and sets	• recognize 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
Working with 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

Learning Journey	Step	Content	Description
			• 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 $\frac{1}{5}$, $\frac{2}{5}$ ...
Working with eighths	1	Introducing eighths of objects or shapes	• find eighths of objects and shapes
			• recognize equivalence with halves and fourths
			• use the language of 'one eighth', 'two eighths', and so forth along with standard fractional notation
Working with halves, fourths & eighths	1	Finding halves, fourths and eighths of objects or shapes	• recognize 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, fourths and eighths of uneven partitioned shapes
			• use symbols for halves, fourths and eighths
			• recognize larger denominator = smaller parts
Working with halves, thirds, fourths	1	Finding halves, thirds or fourths of shapes using partitioning	• recognize that equal shares are not always the same shape
Representing simple fractions	1	Introducing the terms numerator and denominator	• read and write symbols to represent fractions
			• use the terms denominator and numerator to describe a fraction
	2	Identifying and representing simple fractions of an object or shape (denominators 1-12)	• find any fraction, eg 5 squares shaded out of 12 is $\frac{5}{12}$
			• recognize larger denominator = smaller parts
			• recognize that objects and shapes can be partitioned in various ways eg recogniZe that shading 5 squares out of 12 can be done in many ways
			• explore equivalences
Ordering & comparing fractions	1	Comparing and ordering simple fractions with the same denominators on a number line up to 1 using a benchmark	• compare common fractions with the same denominator using benchmark fractions on a number line, eg 0, $\frac{1}{2}$, 1
			• order common fractions with the same denominator using benchmark fractions on a number line, eg 0, $\frac{1}{2}$, 1

2 Patterns and Relations (Patterns)

2.1 Use patterns to describe the world and to solve problems.

1. Demonstrate an understanding of increasing patterns by: describing, extending, comparing, creating numerical (numbers to 1000) and non-numerical patterns using manipulatives, diagrams, sounds and actions.			
Quest: Increasing patterns			
Learning Journey	Steps	Content	Description
Working with increasing number patterns to 100	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 an additive number pattern, eg, 'It goes up by 3s'
			• continue and create an additive number pattern
Working with increasing number patterns to 1000	1	Identifying and describing increasing number patterns (1s, 2s, 5s, 10s, 25s) up to 1000	• identify and describe increasing patterns generated by the repeated addition of 2s, 5s, 10s or 25s on a number line or number chart
	2	Recognising patterns with 1 operation involving addition up to 1000	• identify patterns involving addition on a number line or hundreds chart up to 1000
			• describe the rule for a number pattern, eg 'It goes up by 3s'
Working with visual patterns	1	Exploring visual patterns using diagrams, lists, or tables	• represent and record a visual pattern in a variety of ways, e.g., using a table, list, or other diagram
			• recognize and describe the pattern, e.g., 'you add 3 more counters every time'

2. Demonstrate an understanding of decreasing patterns by: describing, extending, comparing, creating numerical (numbers to 1000) and non-numerical patterns using manipulatives, diagrams, sounds and actions.			
Quest: Decreasing patterns			
Learning Journey	Steps	Content	Description
Working with decreasing number patterns within 100	1	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 subtractive number pattern, e.g., 'It goes down by 3s'
			• continue and create a subtractive number pattern represented in numbers, on a number line, or expressed in words, e.g., 'make a pattern that starts at 20 and shrinks by subtracting 2 each time'

Learning Journey	Step	Content	Description
Working with decreasing number pattern within 1000	1	Identifying and describing decreasing number patterns (1s, 2s, 5s, 10s, 25s) up to 1000	• identify and describe decreasing patterns generated by the repeated subtraction of 2s, 5s, 10s or 25s on a number line or number chart
	2	Recognising patterns with 1 operation involving subtraction or division (halving) up to 1000	• identify patterns involving subtraction or division on a number line or hundreds chart
			• describe the rule for a number pattern, eg 'It goes down by 3s', or 'it halves each time'

3. Sort objects or numbers, using one or more than one attribute.			
Quest: Sort numbers & objects by attributes			
Learning Journey	Steps	Content	Description
Sorting numbers according to attributes	1	Identifying odd and even numbers (within 1000)	• identify odd and even numbers (within 1000)
	2	Classifying a set of numbers according to sorting rules (up to 1000)	• classify a given set of numbers according to the number of digits (up to 1000) and whether they are odd or even numbers
Sorting objects according to attributes	1	Identifying and describing the sorting rule of a set of objects	• identify the sorting rule used for a set of objects that have been sorted based on two attributes

3 Patterns and Relations (Variables and Equations)

3.1 Represent algebraic expressions in multiple ways.

4. Solve one-step addition and subtraction equations involving a symbol to represent an unknown number.			
Quest: One-step add/sub problems with unknowns			
Learning Journey	Steps	Content	Description
One-step number problems with unknowns up to 20	1	Finding the missing number to make an addition or subtraction number sentence true (up to 18)	• complete number sentences involving 1 operation of addition or subtraction by finding the missing number using a variety of tools, equipment and strategies, eg using guess and check, eg 5 + [ ] = 13 or 15 - [ ] = 9
	2	Solving addition problems with start and change unknown (within 20)	• solve and recall addition facts within 20 with start and change unknown ; include problems where the operation is on the right side of the equation
	3	Solving subtraction problems with start and change unknown (within 20)	• solve and recall subtraction facts within 20 with start and change unknown; include problems where the operation is on the right side of the equation
One-step number problems with unknowns up to 100	1	Solving addition problems with start and change unknown (within 100)	• solve and recall addition facts up to 3-digits with start and change unknown eg, 32 + [?] = 92
	2	Solving subtraction problems with start and change unknown (within 100)	• solve and recall subtraction facts up to 3-digits with start and change unknown eg, [?] - 23 = 46

4 Shape and Space (Measurement)

4.1 Use direct and indirect measurement to solve problems.

1. Relate the passage of time to common activities, using nonstandard and standard units (minutes, hours, days, weeks, months, years).			
Quest: Understand passage of time			
Learning Journey	Steps	Content	Description
Understanding passage of time concepts	1	Identifying activities that can or cannot be accomplished in selected units of time.	• identify activities that can or cannot be accomplished in minutes, hours, days, weeks, months and years
Introducing time in hours, minutes & seconds	1	Introducing formal units for time: hours	• establish the need for formal units (hours) to measure time
			• identify situations where hours are an appropriate unit for measuring the duration of time
			• identify the relationship between half hours and hours
			• know that there are 24 hours in one day
			• introduce the abbreviation h to record time in hours
			• compare durations in hours
	2	Introducing formal units for time: minutes	• develop a sense of the duration of 1 minute by experiencing activities with this duration
			• identify situations where minutes are an appropriate unit for measuring the duration of time
			• establish the need for formal units (minutes) to measure time
			• identify the relationship between minutes and hours: know that 1 hour is 60 minutes; that $\frac{1}{2}$ hour is 30 minutes; that a quarter of an hour is 15 minutes; and that three-quarters of an hour is 45 minutes
			• read the time on digital clocks using the terms 'thirty' 'fifteen' 'forty-five' etc
			• connect the duration of 1 minute to the coordinated movements of the hands of an analog clock
			• introduce the abbreviation min to record time in minutes
			• compare and sequence durations in minutes
	3	Introducing formal units for time: seconds	• develop a sense of the duration of a few seconds by experiencing activities with this duration
			• establish the need for formal units (seconds) to measure time

Learning Journey	Step	Content	Description
			• identify situations where seconds are an appropriate unit for measuring the duration of time
			• identify the relationship between minutes and seconds: know that 1 minutes is 60 seconds; that $\frac{1}{2}$ minute is 30 seconds
			• connect the duration of 1 minute to the coordinated movements of the hands of an analog clock
			• introduce the abbreviation s to record time in seconds
			• compare and sequence durations in seconds

5 Shape and Space (Measurement)

5.1 Use direct and indirect measurement to solve problems.

2. Relate the number of seconds to a minute, the number of minutes to an hour and the number of days to a month in a problem-solving context.			
Quest: Understand measures of time			
Learning Journey	Steps	Content	Description
Using calendars	1	Introducing calendars	• identify elements of a conventional calendar (month, day, date)
			• identify a day and date using a conventional calendar
			• relate calendars to seasons and significant dates
			• relate calendars to the parts of a written date
	2	Interpreting calendars	• describe how months and days are represented on calendars
			• locate today on a calendar and record the date
			• locate yesterday and tomorrow on a calendar and record their dates
			• locate any given date on a calendar
	3	Using a calendar to solve simple problems involving months	• locate any given month on a calendar
			• use a calendar to determine the number of months between events
			• use a calendar to determine which month comes before/after a given month
Solving problems related to units of time	1	Solving problems related to a comparison of units of time.	• solve a given problem involving the number of seconds in a minute, minutes in an hour or days in a given month

3. Demonstrate an understanding of measuring length (cm, m) by: selecting and justifying referents for the units cm and m, modelling and describing the relationship between the units cm and m, estimating length, using referents, measuring and recording length, width and height.			
Quest: Understand & measure length (m, cm)			
Learning Journey	Steps	Content	Description
Measuring in standard units: cm & m	1	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'

Learning Journey	Step	Content	Description
			• record lengths and distances using abbreviations for metres and centimetres, eg 1 m 25 cm
Selecting units of measurement: m, cm	1	Selecting appropriate units of measurement: metres, centimetres	• select and justify the most appropriate metric unit to measure given lengths and distances (metres and centimetres)
Ordering & comparing lengths: m, cm	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
Converting between m & cm	1	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
Estimating & measuring in cm	1	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)
Measuring length of 3D objects	1	Applying length to attributes of three-dimensional objects	• recognize 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

4. Demonstrate an understanding of measuring mass (g, kg) by: selecting and justifying referents for the units g and kg, modelling and describing the relationship between the units g and kg, estimating mass, using referents, measuring and recording mass.			
Quest: Understand & measure mass (kg, g)			
Learning Journey	Steps	Content	Description
Measuring mass: kilograms	1	Introducing formal units for mass: the kilogram	• establish the need for formal units to measure mass and introduce the kilogram

Learning Journey	Step	Content	Description
			• 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'
Measuring mass: grams	1	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
			• 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
	2	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)

Learning Journey	Step	Content	Description
Selecting units of measurement: kg, g	1	Selecting appropriate units of measurement: grams and kilograms	• select and justify the most appropriate metric unit to measure given mass (grams and kilograms)
Understanding relationships between kg & g	1	Understanding the relationship between units of measurements used in mass	• understand the relationships between 1 g, 10 g, 100 g, 1000 g, and 1 kg and explain the strategies used

5. Demonstrate an understanding of perimeter of regular and irregular shapes by: estimating perimeter, using referents for cm or m, measuring and recording perimeter (cm, m), constructing different shapes for a given perimeter (cm, m) to demonstrate that many shapes are possible for a perimeter.			
Quest: Understand & measure perimeter			
Learning Journey	Steps	Content	Description
Understanding & calculating perimeter	1	Measuring perimeter in centimetres	• calculate the perimeter of two-dimensional shapes placed on centimetre squares
	2	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
	3	Calculating the perimeter of a regular shape in centimetres	• calculate the perimeter of a regular shape in centimetres using mental strategies such as repeated addition where all lengths are shown
			• calculate the perimeter of a regular shape in cm using mental strategies such as repeated addition where one or more lengths are missing
	4	Measuring perimeter of shapes on a geoboard |Note: calculate the perimeter of two-dimensional shapes placed on centimetre squares	• measure the perimeter of regular shapes on a geoboard
			• measure the perimeter of irregular shapes on a geoboard

6 Shape and Space (3-D Objects and 2-D Shapes)

6.1 Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.

6. Describe 3-D objects according to the shape of the faces and the number of edges and vertices.			
Quest: 3D objects			
Learning Journey	Steps	Content	Description
Introducing the attributes of 3D objects	1	Introducing faces	• manipulate three-dimensional objects and recognize that faces are flat surfaces with straight edges
			• identify and describe the number and shape of faces on a cube, rectangular prism or triangular prism
			• select a three-dimensional object from a description of its faces, e.g., '6 square faces'
	2	Introducing edges on three-dimensional objects	• trace around the face of a three-dimensional object onto paper; describe the shape of the edges, e.g., '1 round edge' or '4 straight edges'
			• manipulate and describe the edges of basic three-dimensional objects; recognize that a sphere has no edges
			• identify and count the edges on everyday objects and cones, cylinders, prisms, spheres and cubes
	3	Introducing vertices on three-dimensional objects	• manipulate and describe the vertices of basic three-dimensional objects; recognize that a sphere has no vertices
			• recognize that a vertex is the point where 2 lines meet
			• identify and count the vertices on everyday objects and cones, cylinders, prisms, spheres and cubes
Introducing cubes	1	Introducing cubes	• recognize cubes in the environment and drawings, including different orientations
			• manipulate and describe cubes as having square faces
			• select cubes from other three-dimensional objects using a description, e.g., '6 square faces'; name the shape
Introducing cylinders	1	Introducing cylinders	• recognize cylinders in the environment and drawings, including different orientations
			• manipulate and describe cylinders as having 2 flat surfaces and 1 curved surface

Learning Journey	Step	Content	Description
			• select cylinder from other three-dimensional objects using a description, e.g., '2 flat surfaces and 1 curved surface', name the shape
Introducing spheres	1	Introducing spheres	• recognize spheres in the environment and drawings
			• manipulate and describe spheres as having 1 curved surface
			• select spheres from other three-dimensional objects using a description, 'round and rolls'; name the shape
Introducing cones	1	Introducing cones	• recognize cones in the environment and drawings, including different orientations
			• manipulate and describe cones as having 1 flat surface and 1 curved surface
			• select cones from other three-dimensional objects using a description, '1 flat surface and 1 curved surface'; name the shape
Introducing prisms & pyramids	1	Introducing prisms	• recognize prisms in the environment and drawings, including different orientations
			• manipulate and describe prisms as having identical bases and rectangular faces
			• select prisms from other three-dimensional objects using a description, e.g., 'rectangular faces'; name the shape (as prism only)
	2	Introducing rectangular prisms	• manipulate and describe the attributes of rectangular prisms
			• recognize that a cube is a special kind of rectangular prism
			• recognize rectangular prisms in the environment and drawings
	3	Introducing pyramids	• manipulate and describe pyramids using everyday language, e.g., 'it comes to a point'
			• recognize pyramids in the environment and drawings
			• select pyramids from other three-dimensional objects using a description, '1 square face, 4 triangular faces'; name the shape (pyramid only — no need for specific pyramid names)
	4	Comparing, sorting and naming prisms and pyramids	• compare and sort prisms and pyramids by their geometric properties, eg number of edges, number of vertices

Learning Journey	Step	Content	Description
			• describe and name prisms and pyramids by the shape of their base
Describing the attributes of 3D objects	1	Identifying faces, edges, vertices of cones, cubes, prisms, cylinders and spheres	• manipulate and describe the faces, edges and vertices of basic three-dimensional objects
			• identify and count the faces, edges and vertices on everyday objects and cones, cylinders, prisms, spheres and cubes
	2	Describing the attributes of cones, cubes, cylinders, spheres and prisms	• manipulate and describe the attributes of basic three-dimensional objects using attributes such as faces, edges, vertices, number and type of surfaces
			• select a three-dimensional object from a description, eg '6 faces, 12 edges and 8 vertices'
			• recognize that flat surfaces of three-dimensional objects are two-dimensional shapes and name the shapes of these surfaces
Comparing & sorting 3D objects	1	Comparing three-dimensional objects including pyramids, prisms, cones, spheres, and cylinders	• describe similarities and differences between prisms (including cubes), pyramids, cylinders, cones and spheres, e.g., surfaces, faces, edges, and vertices
			• recognize and describe the use of three-dimensional objects in a variety of contexts, e.g., buildings, packaging
			• identify and name three-dimensional objects as prisms (including cubes), pyramids, cylinders, cones and spheres
	2	Sorting three-dimensional objects (cubes, prisms, pyramids, spheres, cylinders)	• sort three-dimensional objects according to particular attributes, eg the shape of the surfaces or number of edges
			• explain the attribute or multiple attributes used
			• distinguish between the attributes of objects that are geometric properties and the attributes that are not, eg colour, size, texture
Making basic models of 3-D objects	1	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

Learning Journey	Step	Content	Description
			• 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

7. Sort regular and irregular polygons, including: triangles, quadrilaterals, pentagons, hexagons, octagons according to the number of sides.			
Quest: Sort & identify two-dimensional shapes			
Learning Journey	Steps	Content	Description
Comparing 2-D shapes	1	Comparing 1 shape with another: squares, rectangles, circles and triangles	• describe similarities and differences in terms of number of sides, side lengths and corners
Identifying & naming 2-D shapes	1	Identifying and naming two-dimensional shapes	• identify and name two-dimensional shapes including octagons, pentagons, circles, hexagons, triangles and quadrilaterals by their number of sides
			• select a shape from a description of its features, eg number of sides or vertices
			• measure and describe the side properties of the special quadrilaterals, including parallelograms, rectangles, rhombuses, squares, trapezoids and kites
			• identify and name shapes in pictures, designs and the environment
Sorting 2-D shapes	1	Sorting two-dimensional shapes	• sort regular and irregular two-dimensional shapes in various orientations including octagons, pentagons, circles, hexagons, triangles, quadrilaterals; explain the attribute used to sort, eg size
			• sort regular and irregular two-dimensional shapes in various orientations including octagons, pentagons, circles, hexagons, triangles, quadrilaterals using a given attribute, eg number of sides or vertices
	2	Identifying the sorting rule of sets of polygons based on attributes	• identify the sorting rule used on a pre-sorted set of regular polygons, based on attributes
			• identify the sorting rule used on a pre-sorted set of irregular polygons, based on attributes
Regular & irregular polygons			
Understanding regular & irregular polygons	1	Representing and describing regular polygons	• use the term 'two-dimensional' to describe plane (flat) shapes

Learning Journey	Step	Content	Description
			• draw or represent two-dimensional shapes in different orientations using a variety of materials, with and without the use of digital technologies
			• name two-dimensional shapes in different orientations, eg triangles, quadrilaterals, pentagons, hexagons, octagons and describe the number of angles and/or sides
	2	Identifying regular and irregular two-dimensional shapes	• identify a regular shape from a group of irregular shapes, eg a regular pentagon in a group of irregular pentagons
			• explain the difference between regular and irregular two-dimensional shapes
			• identify and name two-dimensional shapes presented as either regular or irregular shapes in different orientations

7 Statistics and Probability (Data Analysis)

7.1 Collect, display and analyze data to solve problems.

1. Collect first-hand data and organize it using: tally marks, line plots, charts, lists to answer questions.			
Quest: Organize first-hand data			
Learning Journey	Steps	Content	Description
Understanding & using line plots	1	Introducing and reading basic line plots (dot plots)	• become familiar with the structure and layout of information in a dot plot
			• read and interpret simple discrete data sets represented on a line plot; pose and answer questions
	2	Representing and reading data in basic line plots (dot plots)	• order discrete data sets represented with concrete objects, numbers or symbols
			• record discrete data in a table showing frequency
			• represent discrete data sets on a simple line plot with a single scale
			• read and interpret simple discrete data sets represented on a line plot; pose and answer questions
Understanding & using data in lists & tables	1	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
	2	Collecting and recording category data in tables	• create a list of categories for efficient data collection and present in a table format, e.g., 'Which sport is the most popular with members of our class?'
			• sort data from a simple survey and create a list or table to organize the data, e.g., sort data on the number of children in a class.
			• determine which data should be collected and presented in the table
Understanding the statistical process	1	Introducing the statistical investigation process (tables, lists, pictographs 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

Learning Journey	Step	Content	Description
			• represent category data in a table, list, bar graph or pictograph (one-to-one correspondence)
			• record observations and answer simple summary questions based on data collected and displayed in a list, table, pictograph, or simple bar graph

2. Construct, label and interpret bar graphs to solve problems.			
Quest: Bar graphs			
Learning Journey	Steps	Content	Description
Understanding & using bar graphs	1	Introducing and reading data in bar graphs with one-to-one correspondence	• become familiar with the structure and layout of a basic bar 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
			• recognize and remedy errors in bar graphs
	2	Representing and reading data in a given bar graph with one-to-one correspondence	• complete a vertical or horizontal bar graph (one-to-one correspondence) ; choose the correct title for a bar 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 bar graph

Part II

Grade 4

8 Number

8.1 Develop number sense.

1. Represent and describe whole numbers to 10 000, pictorially and symbolically.			
Quest: Number concepts to 10 000			
Learning Journey	Steps	Content	Description
Reading & writing numbers to 10 000	1	Reading and writing 4-digit numbers using words and numbers	• write a given 4-digit number in words, e.g., 4567 as four thousand, four hundred sixty-seven
			• write the numbers for a 4-digit number given in words
	2	Representing 4-digit numbers using words, numbers, and objects	• model a given 4-digit number using concrete materials, pictures, or drawings
			• write the numbers in words, e.g., 'seven thousand, three hundred fifty-three' for a 4-digit number represented using place value manipulatives or using pictures/drawings
Understanding place value, 4-digit numbers	1	Identifying the place value of digits in 4-digit numbers	• write the number for a 4-digit number modelled using place value manipulatives
			• 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, e.g., 'an 8 in the thousands, 5 in the hundreds, and a 2 in the ones' as 8502
			• recognize the role of zero as a placeholder
			• create the smallest and largest numbers possible using 4 digits
Partitioning 4-digit numbers	1	Using place value to partition 4-digit numbers	• use place value manipulatives to partition a given 4-digit number into thousands, hundreds, tens, and ones
			• describe a 4-digit number using words, e.g., 9,523 as '9 thousands, 5 hundreds, 2 tens, and 3 ones'
			• write a 4-digit number in expanded form, e.g., 7,523 as 7000 + 500 + 20 + 3
			• write the number for a number represented by expanded form
			• recognize zero as a placeholder

Learning Journey	Step	Content	Description
	2	Partitioning 4-digit numbers using non-standard partitioning	• use place value equipment to partition a given 4-digit number using non-standard partitioning, e.g., 2375 as 2 thousands, 1 hundred and 275 ones or 2000 + 100 + 275
			• model and identify a number from non-standard partitioning, e.g., recognize 3 hundreds, 4 tens, and 27 ones or 300 + 40 + 27 as 367

2. Compare and order numbers to 10 000.			
Quest: Compare & order numbers to 10 000			
Learning Journey	Steps	Content	Description
Identifying numbers before & after to 10 000	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'
			• 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'
Identifying missing numbers to 10 000	1	Identifying missing or incorrect numbers in an ordered sequence or number line (to 10 000)	• identify the missing numbers in an ordered sequence or on a number line
			• identify incorrectly placed numbers in an ordered sequence or on a number line
Comparing & ordering numbers to 10 000	1	Comparing numbers to 10 000 (without symbols)	• select the value of any given digit, 10s, 100s or 1000, eg in the number 9845 the 4 represents 4 tens or 40
			• identify and select the larger or smaller number in a set
	2	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
	3	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

Learning Journey	Step	Content	Description
			• 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

3. Demonstrate an understanding of addition of numbers with answers to 10 000 and their corresponding subtractions (limited to 3- and 4-digit numerals) by: using personal strategies for adding and subtracting, estimating sums and differences, solving problems involving addition and subtraction.			
Quest: Addition to 10 000			
Learning Journey	Steps	Content	Description
Adding up to 10 000 using number line	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
	2	Adding up to two 4-digit numbers using place value partitioning on a number line (jump strategy) not exceeding 9999.	• model and solve the addition of up to two 4-digit numbers using an empty number line, eg 2823 + 356 as 2823 + 300 = 3123, 3123 + 50 = 3173, 3173 + 6 = 3179
Adding up to 10 000 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	Adding up to two 4-digit numbers using place value understanding (jump strategy) not exceeding 9999	• solve the addition of up to two 4-digit numbers using a jump strategy, eg 3823 + 356 as 3823 + 300 = 4123, 4123 + 50 = 4173, 4173 + 6 = 4179
			• explain and justify the use of the strategy
Adding up to 10 000 using a split strategy	1	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
	2	Adding up to two 4-digit numbers using place value understanding (split strategy) not exceeding 9999	• solve addition problems using a split strategy, eg 3265 + 327 as 3000 + 200 + 300, 60 + 20 and 5 + 7, 3000 + 500 + 80 + 12 = 592
			• record and explain the strategy using numerals, models and/or diagrams
Adding up to 10 000 using rounding & compensating	1	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)
			• 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

Learning Journey	Step	Content	Description
			• record the strategy using numerals, models and/or diagrams and explain the need to compensate
	2	Adding up to two 4-digit numbers using rounding and compensating not exceeding 9999	• add up to two 4-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 and adjust the answer to compensate for the original rounding, eg 5398 + 23 as 5400 + 23 - 2
Adding up to 10 000 using algorithm	1	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
	2	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
Choosing mixed addition 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
Subtraction to 10 000			
Subtracting up to 10 000 using number line	1	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

Learning Journey	Step	Content	Description
	2	Subtracting up to two 4-digit numbers using place value partitioning on a number line	• model and solve the subtraction of up to two 4-digit numbers using an empty number line, eg 3823 – 356 as 3823 – 300 = 3523, 3523 – 50 = 3473, 3473 – 6 = 3467
Subtracting up to 10 000 using place value	1	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
	2	Subtracting up to two 4-digit numbers using place value understanding (jump strategy)	• solve the subtraction of up to two 4-digit numbers using a jump strategy, eg 6823 - 356 as 6823 - 300 = 6523, 6523 - 50 = 6473, 6473 - 6 = 6467
			• explain and justify the use of the strategy
Subtracting up to 10 000 using a split strategy	1	Subtracting two 3-digit numbers mentally using place value understanding (split strategy)	• solve subtraction problems using a split strategy, eg 548 – 127 as 500 – 100 and 40 – 20 and 8 – 7, 400 + 20 + 1 = 421
			• record and explain the strategy using numerals, models and/or diagrams
	2	Subtracting up to two 4-digit numbers using place value understanding (split strategy)	• solve subtraction problems using a split strategy, eg 4548 - 2127 as 4000 - 2000 and 500 - 100 and 40 - 20 and 8 - 7, 400 + 20 + 1 = 421
			• record and explain the strategy using numerals, models and/or diagrams
Subtracting up to 10 000 using round & compensate	1	Subtracting up to two 3-digit numbers using rounding and compensating	• 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
	2	Subtracting up to two 4-digit numbers using rounding and compensating	• subtract up to two 4-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

Learning Journey	Step	Content	Description
Subtracting up to 10 000 using algorithms	1	Using a formal written algorithm to record subtraction calculations involving up to four-digit numbers (without regrouping)	• apply algorithms to solve problems without regrouping, 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 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
Choosing mixed subtraction strategies	1	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
Add & subtract word problems to 10 000			
Solving addition & subtraction word problems	1	Solving one-step word problems using efficient mental addition strategies with numbers up to five digits	• solve addition word problems using mental strategies
	2	Solving word problems using efficient mental subtraction strategies with numbers up to five digits	• solve subtraction word problems using mental strategies

4. Apply the properties of 0 and 1 for multiplication and the property of 1 for division.			
Quest: Multiply by 0 & 1, divide by 1			
Learning Journey	Steps	Content	Description
Multiplying by 1 or 0	1	Multiplying by 1 or 0	• identify the effect of multiplication by 1 or 0
Dividing by 1	1	Dividing by 1 using bar models	• identify the effect of division by 1 using bar models

5. Describe and apply mental mathematics strategies to determine basic multiplication facts to 9 × 9 and related division facts.			
Quest: Multiplication facts to 9 x 9			
Learning Journey	Steps	Content	Description
Exploring multiplication by 2	1	Exploring multiplication by 2 (up to x 9)	• relate multiplication by 2 to doubles; model and describe, eg '2 groups of 4 is the same as double 4'; recognize that the result of multiplying by 2 is an even number
			• use the multiplication symbol when describing and solving multiplication problems
			• explore patterns of the 2 multiplication facts on a number chart
			• model the related 2 multiplication facts, eg 2 x 4 and 4 x 2
Exploring multiplication by 3	1	Exploring multiplication by 3 (up to x 9)	• 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
Exploring multiplication by 4	1	Exploring multiplication by 4 (up to x 9)	• relate multiplication by 4 to double multiplication by 2
			• explore patterns of the multiplication facts for 4 on a number chart
			• model the 2 related multiplication facts, eg 3 x 4 and 4 x 3
Exploring multiplication by 5	1	Exploring multiplication by 5 (up to 9 x 5)	• relate multiplication by 5 to multiplication by 4 and 1 more group; model and describe, eg '5 x 4 is the same as 4 x 4 and one more group of 4'
			• use the multiplication symbol when describing and solving multiplication problems
			• explore patterns of the 5 multiplication facts on a number chart
			• show the 2 related multiplication facts, eg 6 x 5 and 5 x 6

Learning Journey	Step	Content	Description
Exploring multiplication by 6	1	Exploring multiplication by 6 (up to 9 x 6)	• relate multiplication by 6 to multiplication by 5 and 1 more group; model and describe, eg '6 x 4 is the same as 5 x 4 and one more group of 4'
			• relate multiplication by 6 to double multiplication by 3
			• explore patterns of the 6 multiplication facts on a number chart
			• show the 2 related multiplication facts, eg 4 x 6 and 6 x 4
Exploring multiplication by 7	1	Exploring multiplication by 7 (up to x 9)	• 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
Exploring multiplication by 8	1	Exploring multiplication by 8 (up to x 9)	• 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
Exploring multiplication by 9	1	Exploring multiplication by 9 (up to x 9)	• 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)
Recalling multiplication facts to 7 x 7	1	Recalling multiplication facts to 7 x 7	• recall the multiplication facts to 7 x 7
			• solve multiplication problems up to 7 x7, including word problems
Division facts to 81 ÷ 9			
Dividing by 2 & 5	1	Dividing by 2 (up to 18) and 5 (up to 45)	• recall the division facts for 2 and 5
			• solve division problems with 2 and 5 including word problems
			• model and describe the related division and multiplication facts for 2, eg 8 ÷ 2 = 4 is related to 2 x 4 = 8
			• model and describe the related division and multiplication facts for 5, eg 20 ÷ 5 = 4 is related to 5 x 4 = 20
Dividing by 3 & 6	1	Dividing by 3 (up to 27) and 6 (up to 54)	• recall the division facts for 3 and 6
			• solve division problems with 3 and 6 including word problems
			• model and describe the related division and multiplication facts for 3, eg 12 ÷ 3 = 4 is related to 3 x 4 = 12

Learning Journey	Step	Content	Description
			• model and describe the related division and multiplication facts for 6, eg 18 ÷ 6 = 3 is related to 6 x 3 = 18
Dividing by 4 and 8	1	Dividing by 4 (up to 36) and 8 (up to 72)	• recall the division facts for 4 and 8
			• solve division problems with 4 and 8 including word problems
			• model and describe the related division and multiplication facts for 3, eg 12 ÷ 3 = 4 is related to 3 x 4 = 12
			• model and describe the related division and multiplication facts for 8, eg 16 ÷ 8 = 2 is related to 8 x 2 = 16
Dividing by 9	1	Dividing by 9 up to 81	• model and describe the related division and multiplication facts for 9, eg 45 ÷ 9 = 5 is related to 9 x 5 = 45
			• relate division to how many (whole) times the divisor goes into the dividend
Multiplication & division facts			
Recall multiplication & division facts to 7 x 7	1	Recalling multiplication and division facts to 7 x 7	• recall the multiplication and division facts to 7 x 7
			• solve multiplication and division problems up to 7 x7, including word problems
Understand relationship, multiplication & division	1	Understanding the relationship between multiplication and division (all multiplication facts up to 9 x 9)	• use reversing to rewrite division statements as multiplication statements

6. Demonstrate an understanding of multiplication (2- or 3-digit by 1-digit) to solve problems by: using personal strategies for multiplication with and without concrete materials, using arrays to represent multiplication, connecting concrete representations to symbolic representations, estimating products, applying the distributive property.			
Quest: Multiplication, 2- or 3-digit by 1-digit			
Learning Journey	Steps	Content	Description
Multiplying 2- or 3-digits by 1-digit, place value	1	Representing and multiplying a 2-digit number by a 1-digit number using place value understanding and the distributive property	• 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 3-digit numbers by 1-digit numbers using split method	• multiply the hundreds, then the tens and then the ones
			• check answers to mental calculations using digital technologies
			• use inverse operations to justify solutions

Learning Journey	Step	Content	Description
Multiplying 2- or 3-digits by 1-digit, doubling	1	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
	2	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
	3	Representing and multiplying a 3-digit number by a 1-digit number using doubling and related facts	• represent and use doubling to multiply a 3-digit and 1-digit number, eg 150 × 6 is 150 × 3, which is 300, and then double to obtain 600
			• explain and justify the use of the strategy
Multiplying 2- or 3-digits by 1-digit, area model	1	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
	2	Multiplying 3-digit numbers by 1-digit numbers using an area model	• use an area model for 3-digit by 1-digit multiplication
			• check answers to mental calculations using digital technologies
			• use inverse operations to justify solutions
Multiplying 2- or 3-digits by 1-digit, factoring	1	Representing and multiplying a 2-digit number by a 1-digit number using the associative property	• represent and use factoring (factor the larger number), eg 18 × 4 = 9 × 2 × 4 = 9 × 8 = 72
			• explain and justify the use of the strategy
	2	Representing and multiplying a 3-digit number by a 1-digit number using factoring (the associative property)	• represent and use factoring (factor the larger number), eg 120 × 3 = 12 × 10 × 3 = 12 × 3 x 10 = 36 x 10 = 360
			• explain and justify the use of the strategy
Multiplying 2- or 3-digits by 1-digit, algorithm	1	Multiplying 2-digit numbers by 1-digit numbers using the contracted algorithm (no regrouping)	• multiply the ones, then the tens, without regrouping
	2	Multiplying 2-digit numbers by 1-digit numbers using the contracted algorithm (with regrouping)	• multiply 2-digit numbers by 1-digit numbers using the contracted algorithm (with regrouping)
	3	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

Learning Journey	Step	Content	Description
			• use inverse operations or digital technologies to check solutions
Multiply to 3-digits x 1-digit, expanded algorithm	1	Multiplying 2-digit numbers by 1-digit numbers using the expanded algorithm	• multiply the ones, then the tens, with and without regrouping
			• model the method with place value models or diagrams; relate to the area model
			• check answers to mental calculations using inverse solutions or digital technologies
	2	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
			• model the method with place value models or diagrams; relate to the area model
			• check answers to mental calculations using inverse solutions or digital technologies
Multiply to 3-digits x 1-digit, round to estimate	1	Using rounding to estimate product of multiplication (2- or 3- digit by 1-digit)	• round a 2-digit number to the nearest ten when multiplying by a 1-digit number to estimate product
			• round a 3-digit number to the nearest hundred when multiplying by a 1-digit number to estimate product
Multiplying by multiples of 10 & 100	1	Using place value to multiply (x 10)	• model the multiplication of a 1-digit number and a multiple of 10 using place value equipment or models, eg model 4 groups of 30 using tens rods
			• relate to known facts and place value understanding, eg 4 x 3 = 12 so 4 x 3 tens = 12 tens or 120
	2	Using place value to multiply (x 100)	• model the multiplication of a 1-digit number and a multiple of 100 using place value equipment or models, eg model 4 groups of 300 using hundreds blocks
			• relate to known facts and place value understanding, eg 4 x 3 = 12 so 4 x 3 hundreds = 12 hundreds or 1200

7. Demonstrate an understanding of division (1-digit divisor and up to 2-digit dividend) to solve problems by: using personal strategies for dividing with and without concrete materials, estimating quotients, relating division to multiplication.			
Quest: Division, 2-digit by 1-digit			
Learning Journey	Steps	Content	Description
Dividing 2-digits by 1-digit, models	1	Dividing 2-digit numbers by a 1-digit number by partitioning (no exchange, no remainders)	• divide 2-digit numbers by a 1-digit number using partitioning and place value grids, part-whole models etc

Learning Journey	Step	Content	Description
	2	Dividing 2-digit numbers by a 1-digit number by partitioning (with exchange, no remainders)	• divide 2-digit numbers by a 1-digit number using partitioning and place value grids, part whole models etc
	3	Dividing 2-digit numbers by a 1-digit number by partitioning (with remainders)	• divide 2-digit numbers by a 1-digit number using partitioning and number lines, place value grids, part–whole models etc
Dividing 2-digits by 1-digit, halving	1	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
Dividing 2-digits by 1-digit, related facts	1	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
Dividing 2-digits by 1-digit, inverse relationship	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
Dividing 2-digit by 1-digit, extended algorithm	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 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
	3	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
Dividing 2-digit by 1-digit, algorithm	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 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
	3	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
Dividing 2-digit by 1-digit, round to estimate	1	Using rounding to estimate quotient of division (1- digit divisor and 2-digit dividend)	• round a 2-digit number to the nearest ten when dividing by a 1-digit number to estimate quotient
Dividing by 1 using bar models	1	Dividing by 1 using bar models	• identify the effect of division by 1 using bar models

8. Demonstrate an understanding of fractions less than or equal to one by using concrete, pictorial and symbolic representations to: name and record fractions for the parts of a whole or a set, compare and order fractions, model and explain that for different wholes, two identical fractions may not represent the same quantity, provide examples of where fractions are used.			
Quest: Represent fractions less than/equal to 1			
Learning Journey	Steps	Content	Description
Introducing the terms numerator & 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
Understanding fractions	1	Identifying and representing simple fractions of an object or shape (denominators 1-12)	• find any fraction, eg 5 squares shaded out of 12 is $\frac{5}{12}$
			• recognize larger denominator = smaller parts
			• recognize that objects and shapes can be partitioned in various ways eg recogniZe that shading 5 squares out of 12 can be done in many ways
			• explore equivalences
Representing halves, fourths & eighths	1	Finding halves, fourths and eighths of objects or shapes	• recognize 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, fourths and eighths of uneven partitioned shapes
			• use symbols for halves, fourths and eighths
			• recognize larger denominator = smaller parts
Representing thirds & sixths	1	Finding thirds and sixths of objects, shapes and sets	• recognize 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’
Representing 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

Learning Journey	Step	Content	Description
			• use language 'one fifth', 'two fifths', 'three fifths' and so on
			• use symbols to represent fractions $\frac{1}{5}$, $\frac{2}{5}$ ...
Representing tenths	1	Introducing tenths	• recognize that tenths come from 10 equal parts
			• find tenths of objects, sets, and shapes
			• find the whole from the part
			• use language 'one tenth', 'two tenths,' etc
			• use symbols to represent fractions $\frac{1}{10}$, $\frac{2}{10}$, etc
			• recognize that tenths come from dividing 1-digit numbers or quantities by 10
Representing eighths	1	Introducing eighths of objects or shapes	• find eighths of objects and shapes
			• recognize equivalence with halves and fourths
			• use the language of 'one eighth', 'two eighths', and so forth along with standard fractional notation
Compare & order fractions			
Comparing & ordering unit fractions with models	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, fourths, fifths, sixths, sevenths, eighths)
Comparing & ordering common fractions with models	1	Comparing and ordering common fractions with different denominators using models and diagrams	• compare and order common fractions using models and diagrams for support
			• compare and order common fractions with different denominators (halves, thirds, fourths, fifths, sixths, sevenths, eighths)
Comparing fractions with the same numerator	1	Comparing fractions with the same numerator up to 1 using >, =, < (denominators 2, 3, 4, 6, 8)	• compare fractions with the same numerator up to 1 using >, =, < (denominators 2, 3, 4, 6, 8)
Compare fractions with the same denominator	1	Comparing fractions with the same denominator up to 1 using >, =, < (denominators 2, 3, 4, 6, 8)	• compare fractions with the same denominator up to 1 using >, =, < (denominators 2, 3, 4, 6, 8)

9. Represent and describe decimals (tenths and hundredths), concretely, pictorially and symbolically.			
Quest: Decimals to hundredths			
Learning Journey	Steps	Content	Description
Introducing decimal notation	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
			• read decimal fractions correctly, ie 'six point nine'
			• understand that any numbers after the decimal point represent part of a whole
Introducing decimal tenths	1	Introducing decimal tenths	• recognize that the place value system can be extended to tenths
			• represent tenths using concrete materials and written representations
			• recognize that tenths arise from dividing an object into 10 equal parts
			• recognize 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 manipulatives such as base ten blocks, place value chart, hundreds chart
	2	Reading and representing tenths on a place value grid	• read and represent tenths on a place value grid
Introducing decimal hundredths	1	Introducing decimal hundredths	• recognize that the place value system can be extended to tenths and hundredths
			• recognize 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 numbers correctly, ie 'six and nineteen hundredths'
	2	Modelling and representing decimal numbers up to 2 decimal places	• model decimal numbers using concrete materials
			• represent decimal numbers, eg as fractions (tenths and hundredths), on number lines, using hundreds grids, in place value models and charts

10. Relate decimals to fractions and fractions to decimals (to hundredths).			
Quest: Connect decimals & fractions			
Learning Journey	Steps	Content	Description
Connecting decimals & fractions, tenths	1	Connecting decimal numbers to common fractions involving tenths	• understand the relationship between decimal numbers and common fractions involving tenths
			• recognize 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 $\frac{5}{10}$
Connecting decimals & fractions, hundredths	1	Connecting decimal fractions to common fractions involving hundredths	• understand the relationship between decimal fractions and common fractions involving hundredths
			• recognize and apply decimal notation to express whole numbers and hundredths as decimals, eg 0.15 is the same as $\frac{15}{100}$
Connecting decimals & fractions, up to hundredths	1	Connecting decimal numbers to common fractions involving tenths and hundredths	• understand the relationship between decimal numbers and common fractions involving tenths and hundredths
			• recognize 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 $\frac{5}{10}$

11. Demonstrate an understanding of addition and subtraction of decimals (limited to hundredths) by: using personal strategies to determine sums and differences, estimating sums and differences, using mental mathematics strategies to solve problems.			
Quest: Add & subtract decimals to hundredths			
Learning Journey	Steps	Content	Description
Adding decimals to tenths	1	Adding decimals to 1 decimal place using base 10 blocks	• add simple decimals with 1 decimal place using base ten blocks
	2	Adding decimals with 1 decimal place using a place value grid	• add decimals with 1 decimal place using a place value grid
	3	Adding decimals to 1 decimal place using place value partitioning and models for support	• apply place value partitioning to add tenths and whole numbers or just tenths eg 3.4 + 5.2 as 3 + 5 and 4 tenths + 2 tenths
	4	Adding decimals to 1 decimal place using bridging to 10 and models for support	• apply bridging to 10 to add tenths and whole numbers or just tenths eg 3.8 + 0.5 as 3.8 + 0.2 + 0.3

Learning Journey	Step	Content	Description
	5	Adding decimals to 1 decimal place using rounding and compensating and models for support	• apply rounding and compensating to add tenths and whole numbers or just tenths eg 3.9 + 5.2 as 4 + 5.2 = 9.2, 9.2 – 0.1 = 9.1
Subtracting decimals to tenths	1	Subtracting decimals with 1 decimal place using base 10 block arrays	• subtract simple decimals with 1 decimal place using base ten block arrays
	2	Subtracting decimals with 1 decimal place using using a place value grid	• subtract decimals with 1 decimal place using a place value grid
Adding decimals to hundredths	1	Adding decimals using concrete materials	• add simple decimals up to hundredths using concrete materials and models, eg fraction circles, base ten blocks
	2	Adding decimals to hundredths	• add a whole number and a decimal (to hundredths)
			• add 2 decimal numbers in tenths
			• add 2 decimals numbers in hundredths
			• add decimal numbers to 2 places (mixed place value)
Subtracting decimals to hundredths	1	Subtracting decimals using concrete materials	• subtract simple decimals up to hundredths using concrete materials and models, eg fraction circles, base ten blocks
	2	Subtracting decimals to hundredths	• subtract a decimal up to the hundredths place from a whole number
			• subtract 2 decimal numbers in tenths
			• subtract 2 decimal numbers in hundredths
			• subtract 2 decimal numbers to 2 places (mixed place value)
Estimating decimal sums & differences	1	Estimating sums of decimals (to 2 decimal places)	• estimate sums of decimals (to 2 decimal places)
	2	Estimating differences of decimals (to 2 decimal places)	• estimate differences of decimals (to 2 decimal places)
Adding & subtracting decimal word problems	1	Adding and subtracting decimal word problems involving tenths	• add decimal word problems involving tenths
			• subtract decimal word problems involving tenths
	2	Adding and subtracting decimal word problems involving hundredths	• add decimal word problems involving hundredths
			• subtract decimal word problems involving hundredths

Learning Journey	Step	Content	Description
Use decimals in the context of money			
Using decimals in money	1	Using decimals to represent money	• recognize 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
Estimating & calculating change	1	Estimating and calculating the change required for various simple cash transactions involving whole-dollar amounts and amounts of less than 1 dollar	• estimate the change required for various simple cash transactions involving whole-dollar amounts and amounts of less than 1 dollar
			• calculate the change required for various simple cash transactions involving whole-dollar amounts and amounts of less than 1 dollar
	2	Estimating and calculating the change required for various simple cash transactions involving whole-dollar amounts and amounts of less than $100	• estimate the change required for various simple cash transactions involving whole-dollar amounts and amounts of less than $100
			• calculate the change required for various simple cash transactions involving whole-dollar amounts and amounts of less than $100
Solving word problems involving money	1	Using money: Addition and subtraction problems	• use addition and subtraction to solve a variety of problems involving purchases of 2 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

9 Patterns and Relations (Patterns)

9.1 Use patterns to describe the world and to solve problems.

1. Identify and describe patterns found in tables and charts.			
Quest: Patterns in tables & charts			
Learning Journey	Steps	Content	Description
Exploring increasing number patterns	1	Exploring number patterns represented in addition tables and charts	• identify and explore patterns in an addition table and explain using properties of operations
	2	Exploring number patterns represented in multiplication tables and charts	• identify and explore patterns in a multiplication table, eg all the 10 times tables are in a straight line or 4 times a number is always even
	3	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
Identifying number patterns up to 1000	1	Identifying and describing additive, subtractive or multiplicative number patterns on charts and number lines up to 1000	• identify number patterns on number lines, calendars, or hundreds charts , eg the multiples of 3 appear diagonally in a hundreds chart
	2	Recognizing patterns with 1 operation involving addition, subtraction, or multiplication (doubling) up to 1000	• identify patterns with involving addition, subtraction, or multiplication on a number line, hundreds chart, or calendar
			• describe the rule for a number pattern, e.g., 'It goes up by 3s', or 'it doubles each time'
Investigating number sequences	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

2. Translate among different representations of a pattern, such as a table, a chart or concrete materials.			
Quest: Different representations in patterns			
Learning Journey	Steps	Content	Description
Relating patterns to tables or charts	1	Relating patterns to information in a table or chart	• create a table or chart from a given shape pattern

Learning Journey	Step	Content	Description
Creating addition patterns from a given rule	1	Generating addition patterns from a given rule	• extend and create a number pattern that follows an addition rule, eg generate the pattern when given the starting number of 1 and the rule 'add 3'
			• extend and create a shape pattern that follows an addition rule, eg a growing pattern of triangles made using matchsticks
			• identify apparent features of that pattern that were not explicit in the rule
Creating multiplication patterns from a given rule	1	Generating multiplication patterns from a given rule	• extend and create a number pattern that follows a rule, eg 'start at 1 and multiply each term by 2 to get the next term' generates the sequence 1, 2, 4, 8, 16, 32, 64, ...
			• identify apparent features of that pattern that were not explicit in the rule

3. Represent, describe and extend patterns and relationships, using charts and tables, to solve problems.			
Quest: Use patterns to solve problems			
Learning Journey	Steps	Content	Description
Using patterns to solve problems	1	Using patterns in a table or chart to solve problems	• translate information in a given problem into a table or chart
			• identify and extend the patterns in a table or chart to solve a given problem
Identifying & describing additive 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 an additive number pattern, eg, 'It goes up by 3s'
			• continue and create an additive number pattern

4. Identify and explain mathematical relationships, using charts and diagrams, to solve problems.			
Quest: Use Venn & Carroll diagrams			
Learning Journey	Steps	Content	Description
Introducing Venn diagrams	1	Introducing Venn diagrams	• group data according to physical attributes given
			• explain why a certain piece of data has been put in each area of the Venn diagram
			• identify physical attributes to sort data by
			• look at sorted data and identify the physical attributes by which they have been sorted

Learning Journey	Step	Content	Description
Introducing Carroll diagrams	1	Introducing Carroll diagrams	• sort data about people or things according to 2 attributes
			• explain why a certain piece of data has been put in each area of the Carroll diagram
			• look at sorted data and identify the attributes by which they have been sorted
Relating Carroll & Venn diagrams	1	Relating Carroll and Venn diagrams	• understand the link between each area of a Venn diagram and a Carroll diagram
			• group data according to physical attributes given
			• explain why a certain piece of data has been put in each area of the Carroll diagrams
			• identify physical attributes to sort data by
			• look at sorted data and identify the physical attributes by which they have been sorted
Describing pattern rules	1	Describing a rule for a given shape pattern	• recognize and describe the pattern, eg 'you add 3 more counters every time'

10 Patterns and Relations (Variables and Equations)

10.1 Represent algebraic expressions in multiple ways.

5. Express a given problem as an equation in which a symbol is used to represent an unknown number.			
Quest: Express a problem as an equation			
Learning Journey	Steps	Content	Description
Matching equations to word problems	1	Writing number sentences to solve word problems (1-digit and 2-digit addition and subtraction)	• represent a word problem as an addition or subtraction number sentence
			• solve and check the appropriateness of the answer against the word problem
			• pose an addition or subtraction word problem using a given number sentence
	2	Expressing word problems to one-step equations	• express given word problems as addition or subtraction equations (up to 2 digit with 2-digit addition or subtraction)
			• express word problems as multiplication or division equations (using multiplication facts up to 10 x 10)
	3	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)
Using symbols to represent unknown numbers	1	Solving 1-step equations with a variable using all 4 operations	• solve 1-step equations with a variable using all 4 operations
	2	Introducing simple variables using 1-step equations and word problems	• express a 1-step problem as an equation using variables
			• matching an equation including variables to a word problem

6. Solve one-step equations involving a symbol to represent an unknown number.			
Quest: One-step equations using all operations			
Learning Journey	Steps	Content	Description
Finding missing numbers: add & subtract equations	1	Finding the missing number to make an addition or subtraction number sentence true (up to 18)	• complete number sentences involving 1 operation of addition or subtraction by finding the missing number using a variety of tools, equipment and strategies, eg using guess and check, eg 5 + [ ] = 13 or 15 - [ ] = 9

Learning Journey	Step	Content	Description
	2	Using the commutative property of addition to find missing numbers (up to 20)	• develop an understanding of the commutative property of addition and complete number sentences in addition and subtraction fact families, eg 9 + 6 = 15, 6 + 9 = 15, 15 - 6 = 9, 15 - 9 = 6
			• describe how the missing number was calculated and check using the opposite operation
			• explain the purpose of the symbol used to represent the unknown number
One-step equations: addition and subtraction	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	Writing number sentences to solve word problems (1-digit and 2-digit addition and subtraction)	• represent a word problem as an addition or subtraction number sentence
			• solve and check the appropriateness of the answer against the word problem
			• pose an addition or subtraction word problem using a given number sentence
One-step equations: multiplication and division	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	Finding the missing number to make a multiplication number sentence true (up to 10 x 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 = ?
	4	Finding the missing number to make a division number sentence true (up to 10 x 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

Learning Journey	Step	Content	Description
One-step equations: balancing number sentences	1	Using equivalent relationships to balance number sentences, 4 operations	• complete number sentences involving addition by calculating missing numbers (within 1000)
			• complete number sentences involving subtraction by calculating missing numbers (within 1000)
			• complete number sentences involving multiplication by calculating missing numbers (within 9 x 9)
			• complete number sentences involving division by calculating missing numbers (within 81 ÷ 9)

11 Shape and Space (Measurement)

11.1 Use direct and indirect measurement to solve problems.

1. Read and record time, using digital and analog clocks, including 24-hour clocks.			
Quest: Read & record time			
Learning Journey	Steps	Content	Description
Telling time to the hour & half hour	1	Telling time to the hour and half hour (analog)	• observe and describe the coordinated movements of the hands on an analog clock as time progresses in half-hour intervals
			• describe the position or draw of the hands of an analog clock when reading time to the half hour
			• read time on analog clocks to the half hour using the terms 'o'clock' and 'half past'
			• position or draw the hands on an analog clock to show time to the half-hour where the time is given using the terms 'o'clock' or 'half-past'
			• relate hour and half hour times and the duration of a half hour to everyday events; develop a personal reference for a half hour
	2	Telling time to the hour and half hour (digital)	• read time on 12-hour digital clocks to the half-hour using the terms 'o'clock' and 'half past'
			• connect 12-hour digital displays for times to the half-hour to their corresponding display on an analog clock
			• record times on analog clocks to the half-hour in 12-hour digital format
			• relate hour and half hour times and the duration of a half hour to everyday events; develop a personal reference for a half hour
			• position or draw the hands on an analog clock to show time to the half-hour where the time is given in 12-hour digital format
Telling time to the quarter hour	1	Telling time to the quarter hour (analog)	• observe and describe the coordinated movements of the hands on an analog clock as time progresses in quarter hour intervals
			• describe the position or draw the hands of an analog clock when reading time to the quarter hour
			• read time on analogue clocks to the quarter-hour using the terms 'o'clock', 'half', 'quarter after' and 'quarter to' and relate to knowledge of fractions

Learning Journey	Step	Content	Description
	2	Telling time to the quarter hour (digital)	• read time on 12-hour digital clocks to the quarter-hour using the terms 'o'clock', 'half', 'quarter after' and 'quarter to'
			• position or draw the hands on an analog clock to show time to the quarter-hour where the time is given using the terms 'o'clock' or 'quarter-after'
			• record times on analog clocks to the quarter-hour in 12-hour digital format
			• position or draw the hands on an analog clock to show time to the quarter-hour where the time is given in 12-hour digital format
			• connect 12-hour digital displays for times to the quarter-hour to their corresponding display on an analog clock
Telling time to 5 minutes	1	Telling time to five minutes (analog)	• observe and describe the movement of the minute hand as time passes, including the time it takes for the minute hand to move from one number to the next and the time it takes for the minute hand to complete one full rotation
			• observe and describe the movement of the hour hand as time passes, including the time it takes for the hour hand to move from 1 number to the next and the time it takes for the hour hand to complete 1 full rotation
			• read time on analog clocks to 5 minutes using the terms 'o'clock', 'after' and 'to', including 'half past', 'quarter after' and 'quarter to' and write in words
			• position or draw the hands on an analog clock to show time to 5 minutes where the time is given using the terms 'o'clock', 'after' and 'to', including 'half past', 'quarter after' and 'quarter to'
	2	Telling time to five minutes (digital)	• read time on 12-hour digital clocks to 5 minutes using the terms 'o'clock', 'past' and 'to', including 'half past', 'quarter past' and 'quarter to'
			• record times on analog clocks to 5 minutes in 12-hour digital format

Learning Journey	Step	Content	Description
			• position or draw the hands on an analogue clock to show time to 5 minutes where the time is given in 12-hour digital format
			• connect 12-hour digital displays for times to 5 minutes to their corresponding display on an analog clock
Telling time to the minute	1	Telling time to the minute (analog)	• read time on analog 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 analog clock when reading time to the minute, including the hour hand, minute hand and second hand
			• position or draw the hands on an analog clock to show time to the minute where the time is given using the terms 'o'clock', 'after' and 'of', including 'half past', 'quarter after' 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', 'after' and 'to', including 'half-past', 'quarter after' and 'quarter to' and write in words
			• record times on analog clocks to the minute in 12-hour digital format
			• position or draw the hands on an analog 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 analog clock
Using am & pm notation	1	Using am and pm notation	• know that there are 24 hours in a day
			• recognize 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 a.m. and p.m. notation
			• know and record midday/noon as 12 pm and 12:00 pm, and midnight as 12 am. and 12:00 am.
			• use am and pm notation to record times in relation to midday/noon and midnight

Learning Journey	Step	Content	Description
			• read times written using am and pm notation using 'after', 'to', morning, afternoon, evening and night appropriately', e.g., 3:40 pm is 'twenty to four in the afternoon'
Using 24-hour time	1	Using 24-hour notation	• recognize 24-hour time notation as an alternative to 12-hour time notation
			• describe familiar situations in which 24-hour time is used such as transport timetables, armed forces, on household appliances
			• identify whether a time expressed in 24-hour time notation represents a time before or after midday/noon
			• convert between 24-hour time notation and 12-hour time notation
			• convert between analog and 24-hour digital clocks
			• record 24-hour time using necessary conventions
			• read and write time on 24-hour digital clocks to the minute using the terms o'clock, after and to, including half-past, quarter after, and quarter to

2. Read and record calendar dates in a variety of formats.			
Quest: Read & record calendar dates			
Learning Journey	Steps	Content	Description
Reading & writing calendar dates	1	Writing dates	• identify a day/date on a calendar and write the date using the appropriate notation eg 11/5/17
	2	Writing dates in various formats and relating to calendar	• understand that the date can be written in various formats
			• relate dates written in the format yyyy/mm/dd to dates on a calendar

3. Demonstrate an understanding of area of regular and irregular 2-D shapes by: recognizing that area is measured in square units, selecting and justifying referents for the units cm^2 or m^2, estimating area, using referents for cm^2 or m^2, determining and recording area (cm^2 or m^2), constructing different rectangles for a given area (cm^2 or m^2) in order to demonstrate that many different rectangles may have the same area.			
Quest: Understand area			
Learning Journey	Steps	Content	Description
Measuring area using non-standard units	1	Measuring area using informal units	• compare use of non-uniform units with uniform units to measure area
			• tile units to completely cover an area
			• consider effect of gaps and overlaps when measuring area

Learning Journey	Step	Content	Description
			• recognize iteration and structure in arrangement of uniform informal units to measure the area
			• identify features that determine whether chosen units will be good units to measure area; ie, units must be the same size, units need to tile without gaps or overlaps
			• estimate areas in uniform informal units
Introducing formal units for area: cm²	1	Introducing formal units for area: the square centimetre	• establish the need for a formal unit to measure area and introduce square centimetres
			• develop a sense of the area of 1 square centimetre and identify surfaces that have area 'about 1 square centimetre', 'less than 1 square centimetre' and 'greater than 1 square centimetre'
			• identify everyday situations where square centimetres are an appropriate unit for measuring area
			• introduce the abbreviation cm² for recording area in square centimetre
Introducing formal units for area: m²	1	Introducing formal units for area: the square metre	• recognize the need for a larger formal unit to measure area and introduce square metres
			• develop a sense of the area of 1 square metre and identify surfaces that have area 'about 1 square metre', 'less than 1 square metre' and 'greater than 1 square metre'
			• identify everyday situations where square metres are an appropriate unit for measuring the area, eg floor of a room
			• recognize that a square metre need not be square in shape, eg cut a piece of cardboard that is 1 metre by 1 metre in half and join the shorter ends to make an area that is 2 metres by half a metre
			• introduce the abbreviation m² for measuring area in square metres
Measure the area of rectangles			
Estimating & measuring areas of rectangles	1	Estimating and measuring areas of rectangles using efficient strategies and counting in square centimetres or metres	• measure the area of rectangles (including squares) using square centimetres and/or square metres (both tiling and using grid overlay) using whole number side lengths only

Learning Journey	Step	Content	Description
			• estimate areas of rectangles (including squares) in square centimetres and/or square metres and then check by measuring
			• develop efficient strategies for counting square centimetres/metres when measuring areas of rectangles
			• draw possible rectangles on a grid to represent a given whole number rectangular area
Comparing & ordering rectangular areas	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
Finding the area of a rectangle, arrays	1	Developing an additive formula for area of a rectangle	• connect arrays with side lengths through repeated addition leading to multiplication
Finding the area of a rectangle, area model	1	Using area models and the distributive property to find the area of a rectangle	• use area models and the distributive property to find the area of a rectangle
Finding the area of rectangles, formula	1	Developing a multiplicative formula for area of a rectangle using metric units	• connect the area of a rectangle to the multiplication of its side lengths and develop a formula (in words) for the area of a rectangle, e.g., Area of rectangle = length x width
			• 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
			• explain methods for finding the area of a square as a type of rectangle; connect multiplying equal sides to the concept of square numbers
Approximate area, non-rectilinear shapes			
Approximating areas, non-rectilinear shapes	1	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

12 Shape and Space (3-D Objects and 2-D Shapes)

12.1 Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.

4. Describe and construct right rectangular and right triangular prisms.			
Quest: Understand prisms			
Learning Journey	Steps	Content	Description
Identifying prisms in the environment	1	Identifying prisms in the environment	• identify prisms (including cubes) in the environment and from drawings, photographs and descriptions
			• investigate types of prisms used in commercial packaging and give reasons for some being more commonly used
Introducing rectangular & triangular prisms	1	Introducing rectangular prisms	• manipulate and describe the attributes of rectangular prisms
			• recognize that a cube is a special kind of rectangular prism
			• recognize rectangular prisms in the environment and drawings
	2	Introducing triangular prisms	• manipulate and describe the attributes of triangular prisms
			• recognize triangular prisms in the environment and drawings
Comparing & describing prisms	1	Comparing, describing and naming rectangular and triangular prisms	• identify the 'base' of prisms
			• recognize that the base of a prism is not always the face where the prism touches the ground
			• name prisms according to the shape of their base, eg rectangular prism
Connecting nets to rectangular & triangular prisms	1	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
			• recognize 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

Learning Journey	Step	Content	Description
	2	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
			• recognize 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
	3	Introducing nets of prisms	• draw and describe nets for rectangular and triangular prisms
	4	Connecting nets to triangular prisms	• choose the net of triangular prisms from the 3D sketch

13 Shape and Space (Transformations)

13.1 Describe and analyze position and motion of objects and shapes.

5. Demonstrate an understanding of congruency, concretely and pictorially.			
Quest: Congruent shapes			
Learning Journey	Steps	Content	Description
Understanding congruent shapes	1	Introducing congruent shapes	• identify shapes in different orientations which have the same properties as a given shape by manipulating or matching and recognize them as 'the same'
	2	Determining if two given 2D shapes are congruent	• determine if two given 2D shapes are congruent
			• identify corresponding vertices and sides of two given congruent shapes

6. Demonstrate an understanding of line symmetry by: identifying symmetrical 2-D shapes, creating symmetrical 2-D shapes, drawing one or more lines of symmetry in a 2-D shape.			
Quest: Recognize and draw line symmetry			
Learning Journey	Steps	Content	Description
Recognizing line symmetry	1	Recognizing 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	Recognizing 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
Identifying & drawing lines of symmetry	1	Drawing lines of symmetry on given designs and shapes	• recognize 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
	2	Completing symmetrical designs	• complete symmetrical designs and shapes given their line of symmetry and one half of the design or shape

14 Statistics and Probability (Data Analysis)

14.1 Collect, display and analyze data to solve problems.

1. Demonstrate an understanding of many-to-one correspondence.			
Quest: Understand many-to-one correspondence			
Learning Journey	Steps	Content	Description
Comparing pictographs - different correspondence	1	Comparing graphs which show one-to-one and many-to-one correspondence	• compare bar graphs which show one-to-one and many-to-one correspondence

2. Construct and interpret pictographs and bar graphs involving many-to-one correspondence to draw conclusions.			
Quest: Graphs using many-to-one correspondence			
Learning Journey	Steps	Content	Description
Using pictographs with many-to-one correspondence	1	Representing data in a pictograph with a scale of 1, 2, 5 or 10	• construct vertical and horizontal pictographs with equal spacing
			• choose an appropriate title and label the axis
			• choose an appropriate picture or symbol for a pictograph and state the key used (1, 2, 5 or 10)
			• solve comparison, sum and difference (one-step and two-step problems) problems related to the data display; make conclusions
	2	Representing data in pictographs using many-to-one correspondence	• represent given or collected categorical data in pictographs
			• 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 pictograph; ask and answer questions related to the data in the display; draw conclusions
Compare pictographs with different correspondence	1	Comparing graphs which show one-to-one and many-to-one correspondence	• compare bar graphs which show one-to-one and many-to-one correspondence
Using bar graphs with many-to-one correspondence	1	Representing data in a horizontal bar graph with a scale of 1, 2, 5 or 10	• construct a vertical or horizontal bar graph using grid paper for support, where appropriate use a scale of eg 2, 5, or 10 to 1

Learning Journey	Step	Content	Description
			• use graphing software to enter data and create bar graphs that represent data
			• mark equal spaces on axes, name and label axes, and choose appropriate titles for bar graphs; use the terms 'horizontal axis', 'vertical axis' and 'axes' appropriately
			• ask and answer one-step and two-step questions, eg, 'How many more students like reading than art?'; make conclusions about data presented in a graph, eg 'Football is the most popular sport for students in Grade 3 at our school'
	2	Reading data in a bar graph with a scale of 1, 2, 5, or 10	• ask and answer one-step and two-step questions, e.g., 'How many more students like reading than art?'
			• make conclusions about data presented in a bar graph, e.g., 'Football is the most popular sport for students in Grade 3 at our school'
			• compare bar graphs with pictographs
			• evaluate simple statements made by others relating to data in a bar graph
	3	Representing data in bar graphs using many-to-one correspondence	• represent given or collected categorical data in bar 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 bar graphs with appropriately labelled axes
			• mark equal spaces on axes, name and label axes, and choose appropriate titles for graphs
			• interpret data in bar graph; ask and answer questions related to the data in the display; draw conclusion

Part III

Grade 5

15 Number

15.1 Develop number sense.

1. Represent and describe whole numbers to 1 000 000.			
Quest: Number concepts to 1 000 000			
Learning Journey	Steps	Content	Description
Reading & writing numbers up to 6 digits	1	Reading and writing 6-digit numbers	• apply an understanding of place value to read numbers of up to 6 digits
			• apply an understanding of place value to write numbers of up to 6 digits
Comparing & ordering numbers up to 6 digits	1	Comparing two 6-digit numbers	• compare two 6-digit numbers using words and symbols <, =, >
	2	Ordering 6-digit numbers	• arrange numbers up to 6 digits in ascending and descending order
Identifying place value of 6-digit numbers	1	Naming the place value for a digit in a number	• name the place value for an underlined digit in a number
			• identify the value of an underlined digit in a number
	2	Identifying the place value of 6-digit numbers	• state the place value of digits in numbers of up to 6 digits
			• pose and answer questions that extend place value understanding of numbers, eg 'What happens if I rearrange the digits in the number 128 345?', 'How can I rearrange the digits to make the largest number?'
			• represent and describe whole numbers to 1 000 000
Using place value to partition 6-digit numbers	1	Using place value to partition 6-digit numbers	• use place value to partition numbers of up to 6 digits, eg 672 012 is 600 000 + 70 000 + 2000 + 10 + 2
	2	Using non-standard partitioning with 6-digit numbers	• partition numbers of up to 6 digits in non-standard forms, eg 670 000 as 500 000 + 170 000

2. Use estimation strategies in problem-solving contexts.			
Quest: Strategies for estimation & computation			
Learning Journey	Steps	Content	Description
Rounding numbers up to 6-digits	1	Rounding numbers up to 10 000 to the nearest 1000	• model a 4-digit number and recognize which thousand it is nearer to; explain reasoning
			• round a 4-digit number to the nearest 1000; recognize the digit in the hundreds column as the key digit

Learning Journey	Step	Content	Description
	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
	3	Rounding 5-digit numbers	• round to the nearest 10, 100, 1000 or 10 000
	4	Rounding 6-digit numbers	• round 6-digit numbers to any place value
Round numbers to estimate - addition & subtraction	1	Rounding 4-digit numbers to the nearest 100 or 1000 estimate sums	• round 4-digit numbers to the nearest 100 or 1000 estimate sums
	2	Rounding 4-digit numbers to the nearest 100 or 1000 to estimate differences	• round 4-digit numbers to the nearest 100 or 1000 to estimate differences
	3	Rounding large numbers (up to 100 000) to the nearest 1000 to estimate sums	• round large numbers to the nearest 1000 to estimate sums
	4	Rounding large numbers (up to 100 000) to the nearest 1000 to estimate differences	• round large numbers to the nearest 1000 to estimate differences
Checking calculations when adding & subtracting	1	Checking accuracy of addition and subtraction calculations	• check solutions to problems by using the inverse operation
			• round numbers appropriately when obtaining estimates to numerical calculations
			• use estimation to check the reasonableness of answers to addition and subtraction calculations
	2	Checking accuracy of addition and subtraction calculations with 4-digit and 5-digit numbers	• check solutions to problems by using the inverse operation
			• round numbers appropriately when obtaining estimates to numerical calculations
			• use estimation to check the reasonableness of answers to addition and subtraction calculations
Using compensation to add & subtract	1	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
			• explain the method used to double or halve
	2	Using compensation to add whole numbers up to 1 000 000, with and without regrouping	• use compensation to add whole numbers up to 1 000 000
	3	Using compensation to subtract whole numbers up to 1 000 000, with and without regrouping	• use compensation to subtract whole numbers up to 1 000 000, with and without regrouping

Learning Journey	Step	Content	Description
Round numbers to estimate - multiply & divide	1	Rounding to estimate products	• estimate products by rounding
	2	Rounding to estimate quotients	• estimate quotients using rounding
Checking calculations when multiplying & dividing	1	Judging the reasonableness of answers to multiplication and division problems	• use the understanding of the effects of multiplication and division to just the reasonableness of answer

3. Apply mental mathematics strategies and number properties in order to understand and recall basic multiplication facts (multiplication tables) to 81 and related division facts.			
Quest: Multiplication facts to 9 x 9			
Learning Journey	Steps	Content	Description
Multiplication facts for 2	1	Multiplication facts for 2 (up to 9 x 2)	• relate multiplying by 2 to doubling
			• show the related multiplication facts for 2, eg 4 x 2 and 2 x 4
			• connect multiplication by 2 facts to division facts
Multiplication facts for 3	1	Multiplication facts for 3 (up to 9 x 3)	• relate multiplying by 3 to multiplying by 2 and 1 more group
			• show the 2 related multiplication facts, eg 4 x 3 and 3 x 4
			• connect multiplication by 3 facts to division facts
Multiplication facts for 4	1	Multiplication facts for 4 (up to 9 x 4)	• relate multiplying by 4 to double multiplying by 2
			• show the 2 related multiplication facts, eg 5 x 4 and 4 x 5
			• connect multiplication by 4 facts to division facts
Multiplication facts for 5	1	Multiplication facts for 5 (up to 9 x 5)	• relate multiplying by 5 to multiplying by 4 and 1 more group
			• relate multiplying by 5 to multiplying by 3 and 2 more group
			• show the 2 related multiplication facts, eg 6 x 5 and 5 x 6
			• connect multiplication by 5 facts to division facts
Multiplication facts for 6	1	Multiplication facts for 6 (up to 9 x 6)	• relate multiplying by 6 to multiplying by 5 and 1 more group
			• relate multiplying by 6 to double multiplying by 3
			• show the 2 related multiplication facts, eg 7 x 6 and 6 x 7
			• connect multiplication by 6 facts to division facts
Multiplication facts for 7	1	Multiplication facts for 7 (up to 9 x 7)	• relate multiplying by 7 to multiplying by 5 and 2 more groups
			• show the 2 related multiplication facts, eg 8 x 7 and 7 x 8

Learning Journey	Step	Content	Description
			• connect multiplication by 7 facts to division facts
Multiplication facts for 8	1	Multiplication facts for 8 (up to 9 x 8)	• relate multiplying by 8 to double multiplying by 4
			• show the 2 related multiplication facts, eg 6 x 8 and 8 x 6
			• connect multiplication by 8 facts to division facts
Multiplication facts for 9	1	Multiplication facts for 9 (up to 9 x 9)	• relate multiplying by 9 to multiplying by 6 and multiplying by 3
			• relate multiplying by 9 to multiplying by 10 (multiply by 10 and then subtract the extra group)
			• show the 2 related multiplication facts, eg 6 x 9 and 9 x 6
			• connect multiplication by 9 facts to division facts
Multiplying by 1 or 0	1	Multiplying by 1 or 0	• identify the effect of multiplication by 1 or 0
Recalling multiplication facts to 9 x 9	1	Recalling multiplication facts to 9 x 9	• recall the multiplication facts to 9 x 9
			• solve multiplication problems up to 9 x 9, including word problems
Relationship between multiplication & division	1	Understanding the relationship between multiplication and division (all multiplication facts up to 9 x 9)	• use reversing to rewrite division statements as multiplication statements
Division facts to 81 ÷ 9			
Dividing by 2 & 5	1	Dividing by 2 (up to 18) and 5 (up to 45)	• recall the division facts for 2 and 5
			• solve division problems with 2 and 5 including word problems
			• model and describe the related division and multiplication facts for 2, eg 8 ÷ 2 = 4 is related to 2 x 4 = 8
			• model and describe the related division and multiplication facts for 5, eg 20 ÷ 5 = 4 is related to 5 x 4 = 20
Dividing by 3 & 6	1	Dividing by 3 (up to 27) and 6 (up to 54)	• recall the division facts for 3 and 6
			• solve division problems with 3 and 6 including word problems
			• model and describe the related division and multiplication facts for 3, eg 12 ÷ 3 = 4 is related to 3 x 4 = 12
			• model and describe the related division and multiplication facts for 6, eg 18 ÷ 6 = 3 is related to 6 x 3 = 18
Dividing by 4 & 8	1	Dividing by 4 (up to 36) and 8 (up to 72)	• recall the division facts for 4 and 8
			• solve division problems with 4 and 8 including word problems

Learning Journey	Step	Content	Description
			• model and describe the related division and multiplication facts for 3, eg 12 ÷ 3 = 4 is related to 3 x 4 = 12
			• model and describe the related division and multiplication facts for 8, eg 16 ÷ 8 = 2 is related to 8 x 2 = 16
Dividing by 9	1	Dividing by 9 up to 81	• model and describe the related division and multiplication facts for 9, eg 45 ÷ 9 = 5 is related to 9 x 5 = 45
			• relate division to how many (whole) times the divisor goes into the dividend
Recall multiplication & division facts to 9 x 9	1	Recalling multiplication and division facts to 9 x 9	• recall the multiplication and division facts to 9 x 9
			• solve multiplication and division problems up to 9 x 9, including word problems

4. Apply mental mathematics strategies for multiplication.			
Quest: Mental strategies to multiply			
Learning Journey	Steps	Content	Description
Multiplying by multiples of 10, 100 & 1000	1	Representing and using known facts to multiply two 2-digit multiples of 10	• represent with models/diagrams and use known facts and place value understanding to multiply two 2-digit multiples of 10, eg using the known fact of 30 x 4 to solve 30 x 40 as (30 x 4) x 10
			• know that multiplying by 10 shifts the digits 1 place to the left
	2	Representing and using known facts to multiply 2 multiples of 10 or 100	• represent with models/diagrams and use known facts and place value understanding to multiply 2 multiples of 10 or 100, eg using the known fact of 30 x 4 to solve 30 x 400 as (30 x 4) x 100
			• know that multiplying by 10 shifts the digits 1 place to the left and multiplying by 100 shifts the digits 2 places to the left
	3	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
			• explain and justify the use of the strategy
Multiplying using doubling	1	Multiplying using doubling	• 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

Learning Journey	Step	Content	Description
	2	Multiplying by 2, 4, or 8 using repeated doubling	• use doubling as a strategy to multiply 2, e.g., 70 x 2 is double 70
			• use double-double as a strategy to multiply by 4, e.g., 70 x 4 is double-double 70 which is 280
			• use doubling as a strategy to multiply by 8, e.g., 70 x 8 is double-double-double 70 which is 560
Multiplying using doubling & halving	1	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
			• explain and justify the use of the strategy
	2	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
			• explain and justify the use of the strategy
Multiplying using distributive property	1	Identifying and using the distributive property of multiplication (2-digit and 1-digit multiplication)	• identify and use the distributive property of multiplication to solve multiplication problems using easier arrangements, eg 52 x 7 is the same as 50 x 7 + 2 x 7
	2	Representing and multiplying a 2-digit number by a 1-digit number using place value understanding and the distributive property	• 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
	3	Multiplying by using the distributive property	• split factors, eg 50 x 8 is the same as 50 x 2 x 4, which becomes 100 x 4
			• explain and justify the use of the strategy

5. Demonstrate, with and without concrete materials, an understanding of multiplication (2-digit by 2-digit) to solve problems.			
Quest: Multiply 2-digits by up to 2-digits			
Learning Journey	Steps	Content	Description
Multiplying 2-digits by 2-digits, area model	1	Multiplying 2-digit numbers by 2-digit numbers using an area model	• use an area model for 2-digit by 2-digit multiplication
			• check answers to mental calculations using digital technologies
			• use inverse operations to justify solutions
Multiplying 2-digits by 2-digits, factorizing	1	Multiplying by using the distributive property	• split factors, eg 50 x 8 is the same as 50 x 2 x 4, which becomes 100 x 4
			• explain and justify the use of the strategy

Learning Journey	Step	Content	Description
	2	Factoring to multiply a 2-digit number by a 2-digit number	• factor to multiply a 2-digit number by a 2-digit number, e.g., 12 × 25 = 3 × 4 × 25 = 3 × 100 = 300
Multiplying 2-digits by 2-digits, use known facts	1	Representing and using known facts to multiply two 2-digit multiples of 10	• represent with models/diagrams and use known facts and place value understanding to multiply two 2-digit multiples of 10, eg using the known fact of 30 x 4 to solve 30 x 40 as (30 x 4) x 10
			• know that multiplying by 10 shifts the digits 1 place to the left
	2	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
			• explain and justify the use of the strategy
Multiplying 2-digits by 2-digits, formal algorithm	1	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
			• check answers to mental calculations using digital technologies
			• use inverse operations to justify solutions
Solving 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
			• apply appropriate digital technologies to solve multiplication word problems
			• use the appropriate operation when solving problems in real-life situations
			• use inverse operations to justify solutions
			• record the strategy used to solve multiplication word problems
			• use selected words to describe each step of the solution process

6. Demonstrate, with and without concrete materials, an understanding of division (3-digit by 1-digit), and interpret remainders to solve problems.			
Quest: Divide up to 3-digits by 1-digit			
Learning Journey	Steps	Content	Description
Dividing up to 3-digit by 1-digit, no remainders	1	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

Learning Journey	Step	Content	Description
	2	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
	3	Dividing a 3-digit number by a 1-digit number using partitioning	• partition a 3-digit number to divide
Dividing by partitioning, no remainders	1	Dividing 2-digit numbers by a 1-digit number by partitioning (no exchange, no remainders)	• divide 2-digit numbers by a 1-digit number using partitioning and place value grids, part-whole models etc
	2	Dividing 2-digit numbers by a 1-digit number by partitioning (with exchange, no remainders)	• divide 2-digit numbers by a 1-digit number using partitioning and place value grids, part whole models etc
Dividing 3-digits by 1-digit, factoring	1	Dividing a 3-digit number by a 1-digit number using factoring using models	• solve division problems by splitting factors, eg 125 ÷ 5 as (100 ÷ 5) + (25 ÷ 5) using models such as rectangular arrays, area models
	2	Dividing a 3-digit number by a 1-digit number using factorising	• solve division problems by splitting factors, eg 125 ÷ 5 as (100 ÷ 5) + (25 ÷ 5)
Finding the remainder, 2-digits by 1-digit	1	Introducing remainders in division problems	• model division, including where the answer involves a remainder, using concrete materials
			• explain why a remainder is obtained in answers to some division problems
			• use mental strategies to divide a 2-digit number by a 1-digit number in problems for which answers include a remainder
			• record remainders to division problems in words
			• interpret the remainder in the context of a word problem
	2	Solving problems involving division of a 2-digit number by a 1-digit number, with remainders	• record remainders as fractions and decimals
			• explain why the remainder in a division calculation is always less than the number divided by (the divisor)
			• check answers to mental calculations using digital technologies
			• show the connection between division and multiplication where there is a remainder
			• use estimation to check the reasonableness of answers to division calculations
Dividing by partitioning with remainders	1	Dividing 2- and 3-digit numbers by a 1-digit number with and without remainders using partitioning	• divide 2- and 3-digit numbers by a 1-digit number with and without remainders using partitioning

Learning Journey	Step	Content	Description
	2	Dividing a 3-digit number by a 1-digit number using partitioning and using models for support	• partition a 3-digit number to divide using models for support
	3	Dividing 2- and 3-digit numbers by a 1-digit number with and without remainders using factoring with area models	• divide 2- and 3-digit numbers by a 1-digit number with and without remainders using factoring with area models, eg 125 ÷ 5 as (100 ÷ 5) + (25 ÷ 5)
Dividing 3-digits by 1-digit, formal algorithm	1	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
	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 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

7. Demonstrate an understanding of fractions by using concrete, pictorial and symbolic representations to: create sets of equivalent fractions, compare fractions with like and unlike denominators.			
Quest: Equivalent fractions			
Learning Journey	Steps	Content	Description
Finding equivalent fractions with models	1	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
Finding equivalent fractions using multiplication	1	Investigating equivalent fractions up to and including 1 whole using multiplication (denominators of 2, 4 and 8; 3 and 6; 5, 10 and 100)	• model, compare and represent the equivalence of fractions by recognizing the factorial relationship between the numerators and denominators
			• create equivalent fractions using multiplication
	2	Using multiplicative strategies to recognize and find equivalent fractions with related denominators up to 1 whole (denominators 2, 3, 4, 5, 6, 8, 10)	• 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
			• use multiplication and division to make equivalent fractions with a given related denominator e.g., $\frac{1}{2}$ = ?/16
Finding equivalent fractions using a number line	1	Investigating equivalent fractions up to and including 1 whole using a number line (denominators 2, 4 and 8; 3 and 6; 5 and 10 and 100)	• model, compare and represent equivalent fractions with related denominators using a number line
			• create equivalent fractions using a number line

Learning Journey	Step	Content	Description
			• solve word problems using equivalent fractions to make comparisons, including using measurements of length, eg Which is longer, $\frac{1}{2}$ a metre or $\frac{3}{4}$ of a metre?
Compare & order fractions			
Comparing unit fractions, different denominators	1	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
			• investigate and explain the relationship between the value of a unit fraction and its denominator
			• compare using <,>, =
Comparing & ordering proper fractions	1	Comparing and ordering proper fractions with the same numerators but different denominators (denominators of 2, 3, 4, 5, 6, 8, 10, 12)	• compare and order proper fractions using a benchmark fraction for support, eg half or fourth
			• compare and order fractions using the relationship between the size of the denominator and the size of the parts
			• record comparisons using >, < or =
			• recognize that comparisons are only valid when the 2 fractions refer to the same whole
	2	Comparing and ordering proper fractions with different numerators and denominators (denominators of 2, 3, 4, 5, 6, 8, 10, 12)	• compare and order proper fractions using a benchmark fraction for support, e.g., half or fourth
			• record comparisons using >, <, or =
			• recognize that comparisons are only valid when the 2 fractions refer to the same whole
	3	Using common denominators to compare and order proper fractions with related denominators	• find a common denominator to compare fractions
			• compare and order using <, >, =
	4	Using common denominators to compare and order proper fractions with unrelated denominators	• find a common denominator to compare fractions
			• compare and order using <, >, =

8. Describe and represent decimals (tenths, hundredths, thousandths), concretely, pictorially and symbolically.			
Quest: Decimals to thousandths			
Learning Journey	Steps	Content	Description
Understanding decimals to thousandths	1	Introducing decimal hundredths	• recognize that the place value system can be extended to tenths and hundredths

Learning Journey	Step	Content	Description
			• recognize 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 numbers correctly, ie 'six and nineteen hundredths'
	2	Modelling and representing decimal numbers up to 2 decimal places	• model decimal numbers using concrete materials
			• represent decimal numbers, eg as fractions (tenths and hundredths), on number lines, using hundreds grids, in place value models and charts
	3	Introducing decimal thousandths	• recognize that the place value system can be extended beyond hundredths
			• express thousandths as decimals
			• interpret decimal notation for thousandths, e.g., 0.123 = $\frac{123}{1000}$
			• state the place value of digits in decimal numbers of up to 3 decimal places
			• model thousandths using concrete materials
			• represent decimal numbers, e.g., as fractions (tenths, hundredths, and thousandths), using concrete materials and in diagrams
	4	Understanding and modelling decimals to thousandths	• identify the place value of digits in decimal numbers up to thousandths
			• model thousandths using a thousandths grid
			• model thousandths using base 10 blocks
Partitioning decimal numbers to thousandths	1	Partitioning decimal numbers up to thousandths	• use place value to partition decimal numbers of up to thousandths
			• partition decimals of up to 3 decimal places in non-standard forms
			• partition fractions up to thousandths into decimals and fractions

9. Relate decimals to fractions and fractions to decimals (to thousandths).			
Quest: Relate decimals & fractions			
Learning Journey	Steps	Content	Description
Relating decimals & fractions up to thousandths	1	Connecting decimal numbers to common fractions involving tenths	• understand the relationship between decimal numbers and common fractions involving tenths

Learning Journey	Step	Content	Description
			• recognize 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 numbers to common fractions involving tenths and hundredths	• understand the relationship between decimal numbers and common fractions involving tenths and hundredths
			• recognize 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 hundredths	• understand the relationship between decimal fractions and common fractions involving hundredths
			• recognize and apply decimal notation to express whole numbers and hundredths as decimals, eg 0.15 is the same as $\frac{15}{100}$

10. Compare and order decimals (to thousandths) by using: benchmarks, place value, equivalent decimals.			
Quest: Compare & order decimals to thousandths			
Learning Journey	Steps	Content	Description
Comparing & ordering decimals to thousandths	1	Comparing decimal numbers up to 2 decimal places	• compare numbers with a different number of decimal places up to 2 decimal places using >, < and =
	2	Comparing and ordering decimal numbers 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

11. Demonstrate an understanding of addition and subtraction of decimals (limited to thousandths).			
Quest: Add & subtract decimals to thousandths			
Learning Journey	Steps	Content	Description
Adding decimals to thousandths	1	Adding decimals to hundredths	• add a whole number and a decimal (to hundredths)
			• add 2 decimal numbers in tenths

Learning Journey	Step	Content	Description
			• add 2 decimals numbers in hundredths
			• add decimal numbers to 2 places (mixed place value)
	2	Adding decimals up to 3 decimal places using place value partitioning and models	• apply place value partitioning to add decimals
	3	Adding decimals with 3 decimal places using bridging to 10 with a number line	• apply bridging to 10 using a number line to add decimals
	4	Adding decimals with 3 decimal places using rounding and compensating	• apply rounding and compensating to subtract decimals
	5	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
Subtracting decimals to thousandths	1	Subtracting decimals to hundredths	• subtract a decimal up to the hundredths place from a whole number
			• subtract 2 decimal numbers in tenths
			• subtract 2 decimal numbers in hundredths
			• subtract 2 decimal numbers to 2 places (mixed place value)
	2	Subtracting decimals up to 3 decimal places with the same number of decimal places using place value partitioning and models	• apply place value partitioning to subtract decimals and whole numbers eg, 6.4 – 5.2 as 6 – 5 and 4 tenths + 2 tenths
	3	Subtracting decimals with 3 decimal places using bridging to 10 and models	• apply bridging to 10 to subtract decimals and whole numbers eg, 3.8 – 0.5 as 3.8 – 0.2 – 0.3
	4	Subtracting decimals with 3 decimal places using rounding and compensating and models	• apply rounding and compensating to subtract decimals and whole numbers eg, 9.9 – 5.2 as 10 – 5.2 = 4.8, 4.8 – 0.1 = 4.7
	5	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

Learning Journey	Step	Content	Description
			• relate decimals to fractions to aid mental strategies
			• solve word problems using mental strategies, including problems involving measurement and money
Adding & subtracting decimal word problems	1	Adding and subtracting decimal word problems involving comparison	• add decimal word problems involving comparison
			• subtract decimal word problems involving comparison
Estimating sums & differences to thousandths	1	Estimating sums and differences of decimal numbers to thousandths	• estimate sums of decimal numbers to thousandths
			• estimate differences of decimal numbers to thousandths

16 Patterns and Relations (Patterns)

16.1 Use patterns to describe the world and to solve problems.

1. Determine the pattern rule to make predictions about subsequent elements.			
Quest: Represent, analyze & apply patterns			
Learning Journey	Steps	Content	Description
Additive & subtractive 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 an 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 subtractive number pattern, e.g., 'It goes down by 3s'
			• continue and create a subtractive number pattern represented in numbers, on a number line, or expressed in words, e.g., '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, e.g., patterns that increase in 3s, 4s, 6s, 7s, 8s, and 9s from any starting point
			• describe the rule for an additive or subtractive number pattern, e.g., '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, e.g., 'make a pattern that starts at 0 and grows by adding 7 each time'
	4	Describing, continuing and creating patterns resulting from addition and subtraction	• identify, continue and create simple number patterns involving addition and subtraction
			• describe patterns using the terms 'increase' and 'decrease', eg for the pattern 48, 41, 34, 27, ..., 'The terms decrease by seven'
			• create, with materials or digital technologies, a variety of patterns using whole numbers

Learning Journey	Step	Content	Description
			• find missing terms in a number sequence
Generating add/subtract patterns from a given rule	1	Generating addition patterns from a given rule	• extend and create a number pattern that follows an addition rule, eg generate the pattern when given the starting number of 1 and the rule 'add 3'
			• extend and create a shape pattern that follows an addition rule, eg a growing pattern of triangles made using matchsticks
			• identify apparent features of that pattern that were not explicit in the rule
	2	Generating subtraction patterns from a given rule	• extend and create a number pattern that follows a subtraction rule, eg generate the pattern when given the starting number of 30 and the rule 'subtract 3'
			• extend and create a shape pattern that follows a subtraction rule, eg a decreasing pattern of triangles made using matchsticks
			• identify apparent features of that pattern that were not explicit in the rule
Working with repeating number & shape patterns	1	Creating, extending and describing repeating patterns	• extend and describe repeating patterns involving more than 1 attribute change, eg transformation and size
			• create repeating patterns involving more than 1 attribute change, eg transformation and size
			• predict the next element in a repeating pattern; justify
	2	Creating repeating patterns using a given criteria, eg using 3 colours and 2 shapes	• create repeating patterns using a given criteria, eg using 3 colours and 2 shapes
			• predict the next element in a repeating element; justify
Multiplication & division number patterns	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
	2	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, ...

Learning Journey	Step	Content	Description
			• 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
	3	Generating multiplication patterns from a given rule	• extend and create a number pattern that follows a rule, eg 'start at 1 and multiply each term by 2 to get the next term' generates the sequence 1, 2, 4, 8, 16, 32, 64, ...
			• identify apparent features of that pattern that were not explicit in the rule
	4	Describing, continuing and creating patterns resulting from multiplication and division	• describe pattern rules (in words) that generate patterns by multiplying or dividing by a constant, to get the next term
			• describe patterns using the terms 'increase' and 'decrease'
			• distinguish between patterns generated by applying a rule to the terms, and patterns generated by applying a rule to each term number (nth term)
			• determine the 'nth' term in a growing or shrinking pattern
			• find missing terms in a number sequence
Modelling number patterns from a table of values	1	Modelling number patterns presented in a table of values	• build a model to represent a number pattern presented in a table of values that shows the term number and the term
			• describe the pattern
			• predict the next term/s in the pattern
Writing pattern rules as algebraic expressions	1	Identifying and writing the rule for increasing patterns as an algebraic expression	• identify and write the rule for increasing patterns as an algebraic expression
	2	Identifying and writing the rule for decreasing patterns as an algebraic expression	• identify and write the rule for decreasing patterns as an algebraic expression
Working with shape patterns & rules	1	Generating shape patterns from a given rule	• extend and create a shape pattern given the core of the sequence
			• identify apparent features of that pattern that were not explicit in the rule
	2	Finding a rule for a given shape pattern	• find and describe the core of the sequence

Learning Journey	Step	Content	Description
			• use simple multiplicative thinking to predict the shape in a given ordinal position, eg every third shape is a diamond so the 30th shape will be a diamond

17 Patterns and Relations (Variables and Equations)

17.1 Represent algebraic expressions in multiple ways.

2. Express a given problem as an equation in which a letter variable is used to represent an unknown number (limited to whole numbers).			
Quest: Equations with letter variables			
Learning Journey	Steps	Content	Description
Expressing word problems as equations	1	Expressing given word problems as an addition or subtraction number sentence and solving	• represent and solve addition and subtraction word problems using number sentences with a symbol for the unknown, eg 'Tickets to the show cost $37. How much change would you get if you paid with a $50 note?'
			• discuss whether it is more appropriate to represent the problem using + or - in order to calculate the solution
	2	Solving multi-step word problems using whole numbers and the four operations (no remainders)	• solve multistep word problems using the four operations; represent problems using equations with a letter standing for the unknown quantity
	3	Solving multi-step word problems using whole numbers and the four operations (with remainders)	• solve multistep word problems using the four operations, including problems in which remainders must be interpreted; represent these problems using equations with a letter standing for the unknown quantity

3. Solve problems involving single-variable, one-step equations with whole number coefficients and whole number solutions.			
Quest: One-step equations with variables			
Learning Journey	Steps	Content	Description
Writing one-step equations using variables	1	Writing 1-step equations using variables (four operations)	• write 1-step equations using variables to represent a word problem (four operations), eg, 5 + y = 8
Solving one-step equations & word problems	1	Solving 1-step equations with a variable using all 4 operations	• solve 1-step equations with a variable using all 4 operations
	2	Introducing simple variables using 1-step equations and word problems	• express a 1-step problem as an equation using variables
			• matching an equation including variables to a word problem
Solving one-step equations using bar model	1	Matching 1-step equations to bar model representation	• match 1-step equations to bar model representation
	2	Solving 1-step equations using bar models	• solve 1-step equations using bar models

18 Shape and Space (Measurement)

18.1 Use direct and indirect measurement to solve problems.

1. Identify 90° angles.			
Quest: Identify 90° angles			
Learning Journey	Steps	Content	Description
Introducing right 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
			• recognize that a pair of perpendicular lines form 4 right angles
Identifying right angles in quadrilaterals	1	Identifying right angles in quadrilaterals	• identify right angles in quadrilaterals
			• sort quadrilaterals by those with and without right angles

2. Design and construct different rectangles, given either perimeter or area, or both (whole numbers), and make generalizations.			
Quest: Perimeter of rectangles			
Learning Journey	Steps	Content	Description
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
Area of rectangles, formula			
Finding the area of rectangles, formula	1	Developing a multiplicative formula for area of a rectangle using metric units	• connect the area of a rectangle to the multiplication of its side lengths and develop a formula (in words) for the area of a rectangle, e.g., Area of rectangle = length x width
			• 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

Learning Journey	Step	Content	Description
			• explain methods for finding the area of a square as a type of rectangle; connect multiplying equal sides to the concept of square numbers
	2	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
Relationship between area & perimeter			
Solving perimeter & area problems	1	Comparing areas and perimeters of rectangles	• construct different rectangles with the same area and compare their perimeters
			• construct different rectangles with the same perimeters and compare their areas
			• investigate the relationship between the side lengths of a rectangle and its perimeter and area
			• investigate the relationship between the side lengths of a square and its perimeter and area
	2	Solving problems relating to perimeter and area of rectangles and squares	• pose and solve problems that require the distinction between perimeter and area
			• draw a number of rectangles of differing areas with the same perimeter; compare with squares
			• determine that only one square is possible if given the area of a square; compare with rectangles
			• investigate what happens to the area of the shape if the length of one pair of opposite sides of the shape are doubled or halved

3. Demonstrate an understanding of measuring length (mm) by: selecting and justifying referents for the unit mm, modelling and describing the relationship between mm and cm units, and between mm and m units.

Quest: Measure length in millimetres

Learning Journey	Steps	Content	Description
Introducing millimetres	1	Introducing formal units for length: millimetres	• recognize the need for a formal unit smaller than the centimetre to measure length

Learning Journey	Step	Content	Description
			• develop a personal reference for the approximate length of 1 mm
			• recognize and model that there are 10 mm in 1 cm, i.e., 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), e.g., 5 cm 3 mm or 53 mm
			• compare lengths with the same standard unit
Recording length in decimal notation	1	Recording centimetres and millimetres using decimal notation	• record lengths and distances using decimal notation to 1 decimal place
	2	Connecting decimal representations to the metric system	• recognize 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
Relationship between mm, cm & m			
Comparing & ordering lengths in mm & cm	1	Comparing lengths in millimetres and centimetres	• compare lengths and distances using millimetres and centimetres
	2	Ordering lengths in millimetres and centimetres	• compare lengths and distances using millimetres and centimetres
Converting between mm & cm	1	Converting between centimetres and millimetres (whole numbers only)	• describe 1 cm as 10 mm
			• convert between centimetres and millimetres using whole numbers
			• record measurement equivalents in a table
			• explain the relationship between the size of a unit and the number of units needed
Converting between m & cm	1	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
Selecting appropriate units of length: mm, cm & m	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

4. Demonstrate an understanding of volume by: selecting and justifying referents for cm^3 or m^3 units, estimating volume, using referents for cm^3 or m^3, measuring and recording volume (cm^3 or m^3), constructing right rectangular prisms for a given volume.			
Quest: Measure volume in cubic units			
Learning Journey	Steps	Content	Description
Using unit cubes 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
Using cubic cm & m to measure volume	1	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
	2	Introducing formal units for volume: cubic metres	• explain why volume is measured in cubic metres in certain situations, eg wood bark, soil or concrete; select and justify referents for cubic cm
			• recognize that a cubic metre can have dimensions other than a cube of side 1 metre
			• record volumes using the abbreviation for cubic metres (m^3)
			• estimate the size of a cubic metre, half a cubic metre and 2 cubic metres
Estimating volume using cubic cm & m	1	Estimating volumes using cubic metres and cubic centimetres as referents	• make appropriate estimations of volumes using cubic metres and cubic centimetres as referents

5. Demonstrate an understanding of capacity by: describing the relationship between mL and L, selecting and justifying referents for mL or L units, estimating capacity, using referents for mL or L, measuring and recording capacity (mL or L).			
Quest: Measure capacity in L & mL			
Learning Journey	Steps	Content	Description
Introducing litres & millilitres	1	Introducing formal units for volume and capacity: litres	• recognize and explain the need for formal units to measure volume and capacity
			• develop a personal reference for one litre and fractions of 1 litre (fourths and halves); relate the litre to familiar everyday containers, eg milk cartons
			• recognize that one-litre containers can be a variety of shapes
	2	Introducing formal units for volume and capacity: millilitres	• recognize the need for a formal unit smaller than the liter to measure volume and capacity

Learning Journey	Step	Content	Description
			• recognize that there are 1000 millilitres in 1 liter, i.e., 1000 millilitres = 1 liter
			• relate the millilitre to familiar everyday containers and familiar informal units, e.g., 250 mL fruit juice containers, 1 teaspoon is approximately 5 mL
Using millilitres & litres as references	1	Introducing litres as a reference	• develop a personal reference for one litre
			• compare other volumes to 1 litre and identify whether a volume is more than or less than 1 litre
Measuring capacity in mL	1	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
Estimating capacity using mL & L	1	Estimating capacities using millilitres and litres as references	• make appropriate estimations of capacities using millilitres and litres as referents
	2	Estimating given capacities in millilitres and litres	• make appropriate estimations of capacities using millilitres and litres
Selecting units to measure capacity (mL, L)	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

19 Shape and Space (3-D objects and 2-D shapes)

19.1 Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.

6. Describe and provide examples of edges and faces of 3-D objects, and sides of 2-D shapes that are: parallel, intersecting, perpendicular, vertical, horizontal.			
Quest: Features of 2-D shapes & 3-D objects			
Learning Journey	Steps	Content	Description
Identifying features on 3-D objects	1	Identifying parallel, intersecting, perpendicular, vertical and horizontal edges and faces on 3D objects	• identify parallel, intersecting, perpendicular, vertical and horizontal edges on 3D objects
			• identify parallel, intersecting, perpendicular, vertical and horizontal faces on 3D objects
Identifying features on 2-D shapes	1	Identifying parallel, intersecting, perpendicular, vertical and horizontal sides on 2D shapes	• identify parallel, intersecting, perpendicular, vertical and horizontal sides on 2D shapes

7. Identify and sort quadrilaterals, including: rectangles, squares, trapezoids, parallelograms, rhombuses according to their attributes.			
Quest: Identify & sort quadrilaterals			
Learning Journey	Steps	Content	Description
Sorting & naming quadrilaterals	1	Sorting and naming quadrilaterals	• sort the special quadrilaterals; explain the attribute used to sort, eg angle, parallel sides, side lengths; classify quadrilaterals into categories and sub-categories
			• identify and name the special quadrilaterals in different orientations, including parallelograms, rectangles, rhombuses, squares, trapezoids, and kites
			• explore and explain the given names of the quadrilaterals, eg parallelogram
	2	Recognizing quadrilaterals that are not rhombuses, rectangles, and squares	• recognize quadrilaterals that are not rhombuses, rectangles, and squares
			• draw quadrilaterals that are not rhombuses, rectangles, and squares
Classifying quadrilaterals	1	Classifying quadrilaterals by their features	• explore, by measurement angle properties of squares, rectangles, parallelograms and rhombuses
			• select and classify a two-dimensional shape from a description of its features including parallel and perpendicular lines
			• recognize that two-dimensional shapes can be classified in more than 1 way

Learning Journey	Step	Content	Description
			• explain the difference between regular and irregular shapes
	2	Classifying quadrilaterals using a variety of strategies	• classify two-dimensional figures in a hierarchy based on properties
			• interpret a hierarchy diagram of two-dimensional shapes and their properties
			• use Venn diagrams to record classifications
			• interpret classifications represented using Venn diagrams

20 Shape and Space (Transformations)

20.1 Describe and analyze position and motion of objects and shapes.

8. Identify and describe a single transformation, including a translation, rotation and reflection of 2-D shapes.			
Quest: Single transformations of 2-D shapes			
Learning Journey	Steps	Content	Description
Introducing slides/translations	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'
			• 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
Introducing flips/reflections	1	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
Introducing turns/rotations	1	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
			• recognize and describe turns as 'clockwise' or 'counterclockwise'
			• 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'

Learning Journey	Step	Content	Description
			• 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
One-step translations, reflections & rotations	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

21 Statistics and Probability (Data Analysis)

21.1 Collect, display and analyze data to solve problems.

2. Construct and interpret double bar graphs to draw conclusions.			
Quest: Double bar graphs			
Learning Journey	Steps	Content	Description
Interpreting data, double bar graphs	1	Introducing and interpreting multiple-bar graphs	• interpret multiple-bar graphs for 2 categorical variables, eg favourite television show of students in Grade 1 compared to that of students in Grade 6
			• ask and answer comparative and relational questions related to data in multiple-bar graph
Representing data, double bar graphs	1	Representing bivariate data in a multiple-bar graph	• construct a multiple-bar graph for two categorical variables eg favourite television show of students in Grade 1 compared to that of students in Grade 6
			• ask and answer comparative and relational questions related to data in a multiple-bar graph

22 Statistics and Probability (Chance and Uncertainty)

22.1 Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.

3. Describe the likelihood of a single outcome occurring, using words such as: impossible, possible, certain.			
Quest: Likelihood of single outcomes			
Learning Journey	Steps	Content	Description
Exploring the language of probability	1	Using the language of probability: possible and impossible	• identify and distinguish between 'possible' and 'impossible' events
			• describe familiar events as being 'possible' or 'impossible', eg 'It is possible that it will rain today', 'It is impossible to roll a standard six-sided dice and get a 7'
	2	Using the language of probability: likely and unlikely	• describe possible outcomes in everyday activities and events as being 'likely' or 'unlikely' to happen
			• compare familiar activities and events and describe them as being 'likely' or 'unlikely' to happen
	3	Using the language of probability: certain and uncertain	• identify and distinguish between 'certain' and 'uncertain' events
			• describe familiar situations as being certain or uncertain, eg 'It is uncertain what the weather will be like tomorrow', 'It is certain that tomorrow is Saturday'
	4	Using the basic language of probability: impossible, possible, likely, unlikely	• identify practical activities and everyday events that involve chance, eg 'I might play with my friend after school'
			• make predictions about what might happen when discussing practical activities and everyday events that involve chance
			• describe outcomes in everyday activities and events as being 'possible', 'impossible', 'likely' or 'unlikely' to happen
	5	Using the language of probability: equally likely, less likely and more likely	• identify and distinguish between 'equally likely', 'less likely' and 'more likely' events
			• compare familiar activities and events and describe them as being 'equally likely', 'more likely' or 'less likely' to happen

4. Compare the likelihood of two possible outcomes occurring, using words such as: less likely, equally likely, more likely.			
Quest: Likelihood of two possible outcomes			
Learning Journey	Steps	Content	Description
Describing chances of everyday events	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
Understanding chance experiments, equal outcomes	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'
Understanding chance experiments, unequal outcomes	1	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

Learning Journey	Step	Content	Description
			• predict the number of times each outcome should occur in a chance experiment involving a set number of trials
	2	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
			• 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'
Understand chance experiments, independent 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

Part IV

Grade 6

23 Number

23.1 Develop number sense.

1. Demonstrate an understanding of place value, including numbers that are: greater than one million, less than one thousandth.			
Quest: Place value to billions			
Learning Journey	Steps	Content	Description
Reading & writing numbers up to billions	1	Reading and writing numbers of any size	• apply an understanding of place value to read numbers of any size
			• apply an understanding of place value to write numbers of any size
	2	Using place value to partition numbers of any size	• use place value understanding and models to partition numbers of any size
	3	Using non-standard partitioning with numbers of any size	• partition numbers of any size in non-standard forms
Place value up to billions	1	Identifying the place value of numbers of any size	• state the place value of digits in numbers of any size
			• pose and answer questions that extend place value understanding of numbers, eg 'What happens if I rearrange the digits in the number 2 312 345?', 'How can I rearrange the digits to make the largest number?'
			• recognize different abbreviations of numbers used in everyday contexts, eg $35 M represents $35 000 000
			• understand the role of zero as a placeholder
			• use place value understanding to count by 10 000 and 100 000
Place value smaller than thousandths			
Place value smaller than thousandths	1	Understanding place value with numbers less than one thousandth	• identify the place value of digits in decimal numbers less than thousandths
			• model numbers less than thousandths using a place value grid
Situational questions			
Situational questions, larger than one million	1	Solving word problems using the 4 operations on quantities larger than one million (using a calculator)	• solve word problems using the 4 operations on quantities larger than one million (using a calculator)

Learning Journey	Step	Content	Description
Situational questions, smaller than one thousandth	1	Solving word problems using the 4 operations on quantities smaller than one thousandth (using a calculator)	• solve word problems using the 4 operations on quantities smaller than one thousandth (using a calculator)

2. Solve problems involving whole numbers and decimal numbers.			
Quest: Solve problems: whole numbers & decimals			
Learning Journey	Steps	Content	Description
Multiplying decimals & whole numbers	1	Solving word problems that involve the multiplication of decimals with 1-digit multipliers	• solve word problems that involve the multiplication of decimals with 1-digit multipliers
Dividing decimals & whole numbers	1	Solving word problems that involve the division of decimals with 1-digit divisors (not including 0)	• solve word problems that involve the division of decimals with 1-digit divisors (not including 0)
Adding decimals & whole numbers	1	Adding a decimal number up to 3 decimal places to a whole number	• add a decimal number and whole numbers eg, 143.0 + 1.34
Subtracting decimals & whole numbers	1	Subtracting decimal numbers up to 3 decimal places from a whole number	• subtract decimal numbers from whole numbers eg, 12.0 – 1.3

3. Demonstrate an understanding of factors and multiples by: determining multiples and factors of numbers less than 100, identifying prime and composite numbers, solving problems using multiples and factors.			
Quest: Prime & composite numbers			
Learning Journey	Steps	Content	Description
Introducing prime & 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'
Prime factors			
Using prime factors	1	Expressing a whole number between 2 - 50 as a product of its prime factors	• express a whole number in the range 2–50 as a product of its prime factors, eg find the prime factors of 24 and express 24 as 2 × 2 × 2 × 3

Learning Journey	Step	Content	Description
	2	Using prime factorization of a whole number to express a number as a product of its prime factors (without exponents)	• factor a whole number to determine its unique factorisation, expressing the result as a product of its prime factors without exponents
			• determine common factors and common multiples using the prime factorization of numbers
			• use factor trees to determine the prime factors of a whole number
			• use factor ladders to determine the prime factors of a whole number
Find factors & multiples			
Finding multiples up to 100, including LCM	1	Finding multiples up to 100	• determine 'multiples' of a given whole number
			• determine the 'least common multiple' (LCM) of 2 whole numbers
Finding factors up to 100, including GCF	1	Finding factors for whole numbers up to 100	• determine all 'factors' of a given whole number up to 100
			• determine the 'greatest common factor' (GCF) of 2 whole numbers
			• determine whether a particular number is a factor of a given number using digital technologies
			• recognize that when a given number is divided by 1 of its factors, the result must be a whole number
Situational questions, factors & multiples	1	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?'

4. Relate improper fractions to mixed numbers and mixed numbers to improper fractions.			
Quest: Improper fractions & mixed numbers			
Learning Journey	Steps	Content	Description
Comparing & ordering mixed numbers	1	Comparing and ordering mixed numbers with models	• compare and order mixed numbers with models
			• record comparisons using <, >, =
	2	Comparing and ordering mixed numbers	• compare and order mixed numbers where the denominators are not always multiples of the same number
			• record comparisons using =, ≠, <, >, ≤, ≥ symbols
Comparing & ordering improper fractions	1	Comparing and ordering improper fractions with models	• compare and order improper fractions with models
			• record comparisons using <, >, =

Learning Journey	Step	Content	Description
	2	Comparing and ordering improper fractions	• compare and order improper fractions where the denominators are not always multiples of the same number
			• record comparisons using =, ≠, <, >, ≤, ≥ symbols
Comparing & ordering fractions & mixed numbers	1	Comparing and ordering proper fractions, improper fractions, and mixed numbers with models	• compare and order proper fractions, improper fractions, and mixed numbers with models
			• record comparisons using <, >, =
	2	Comparing and ordering proper fractions, improper fractions, and mixed numbers	• compare and order proper fractions, improper fractions, and mixed numbers where the denominators are not always multiples of the same number
			• record comparisons using =, ≠, <, > ≤, ≥ symbols
Converting improper fractions to mixed numbers	1	Developing strategies to convert from improper fractions to mixed numbers using models and diagrams	• express improper fractions as mixed numbers through the use of diagrams and number lines
			• develop strategies for converting between mixed numbers and improper fractions
			• connect equivalent fractions >1 to division with remainders, using the number line and other models, and hence move from these to improper and mixed fractions
Converting mixed numbers to improper fractions	1	Developing strategies to convert from mixed numbers to improper fractions using models and diagrams	• express mixed numbers as improper fractions through the use of diagrams and number lines
			• develop strategies, including multiplication strategies for converting between mixed numbers and improper fractions

5. Demonstrate an understanding of ratio, concretely, pictorially and symbolically.			
Quest: Introduction to ratios			
Learning Journey	Steps	Content	Description
Introducing ratios	1	Introducing the language of ratio	• use the language of ratio
	2	Introducing simple ratios	• use ratios to compare quantities measured in the same units
			• represent ratios found in real-life contexts, using concrete materials, drawings, and standard fractional notation
			• write ratios using the : symbol
			• express 1 part of a ratio as a fraction of the whole
	3	Defining ratios	• define ratios

Learning Journey	Step	Content	Description
			• understand the symbol :
	4	Identifying why the ratio a:b is different to the ratio b:a	• identify why the ratio a:b is different to the ratio b:a
			• understand that a ratio of a:b is expressed as the ratio of 'a to b'
Simplifying ratios	1	Comparing quantities measured in the same units using ratios	• compare quantities measured in the same units using ratios
	2	Comparing ratios using a table of values	• compare ratios using a table of values
Dividing a quantity into a given ratio	1	Dividing a quantity into a given ratio	• divide a quantity into a given ratio
			• describe 'sharing' in a given ratio
			• express the division of a quantity into 2 parts as a ratio using original amounts
		Dividing an interval into a given ratio on a number line	• divide an interval into a given ratio on a number line
	2	Dividing a given quantity into 2 parts in a given part:whole ratio	• divide a given quantity into 2 parts in a given part:whole ratio
Identifying equivalent ratios	1	Identifying equivalent ratios	• identify equivalent ratios
			• understand how a change made to 1 part of a ratio affects the other parts of the same ratio
	2	Creating tables of equivalent ratios	• make tables of equivalent ratios relating quantities

6. Demonstrate an understanding of percent (limited to whole numbers), concretely, pictorially and symbolically.			
Quest: Whole-number percentages			
Learning Journey	Steps	Content	Description
Introducing percentages	1	Introducing percentages	• recognize 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

Learning Journey	Step	Content	Description
Percentage equivalents			
Representing percentage & fraction equivalents	1	Representing simple fractions as percentages	• represent simple fractions as percentages and vice versa
			• model percentages with concrete materials/ drawings, eg using 10x10 grid
	2	Representing common fractions as percentages	• represent common fractions as percentages and vice versa
			• model percentages with concrete materials/ drawings, eg using 10x10 grid
Representing percentage & decimal equivalents	1	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
Fraction, decimal & percentage equivalents	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
			• recognize 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
Calculate percentage discounts			
Calculating percentage discounts	1	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

Learning Journey	Step	Content	Description
			• calculate common percentages of quantities
			• choose the most appropriate equivalent form of a percentage to aid calculation
	2	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
Calculate percentages of whole numbers			
Calculating simple percentages	1	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)
	2	Using 50%, 10% and 1% to mentally calculate amounts	• use 50%, 10%, and 1% as strategies to mentally calculate amounts

7. Demonstrate an understanding of integers, concretely, pictorially and symbolically.			
Quest: Read & represent integers			
Learning Journey	Steps	Content	Description
Investigating integers	1	Investigating integers	• recognize 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 backward on a calculator
			• recognize that negative whole numbers can result from subtraction
Understanding integers in real-life contexts	1	Exploring everyday language around integers (positive and negative numbers)	• explore and relate the everyday language of a variety of real-world situations to the use of negative and positive numbers and explain the meaning of 0 in each situation
			• represent statements about real-world contexts using integers

Learning Journey	Step	Content	Description
Comparing & ordering integers	1	Comparing and ordering positive and negative integers	• compare the relative value of integers by using or visualizing a number line
			• use the phrases 'greater than', 'less than' and 'equal to' to compare integers
			• use the symbols < > and = to compare a pair of integers
			• arrange a set of 3 or more integers in 'ascending order' or 'descending order' separated by commas
	2	Placing integers on a number line	• place integers on a number line

8. Demonstrate an understanding of multiplication and division of decimals (1-digit whole number multipliers and 1-digit natural number divisors).			
Quest: Multiply decimals to thousandths			
Learning Journey	Steps	Content	Description
Multiplying decimals to thousandths	1	Multiplying tenths and 1-digit whole numbers using mental strategies	• use efficient mental strategies to multiply tenths and 1-digit whole numbers
	2	Multiplying hundredths and whole numbers using mental strategies	• use efficient mental strategies to multiply hundredths and whole numbers
	3	Multiplying thousandths and 1-digit whole numbers using mental strategies	• use efficient mental strategies to multiply thousandths and 1-digit whole numbers
	4	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
Multiplying decimals & whole numbers, base 10	1	Multiplying decimals to thousandths and 1-digit whole numbers using base 10 block arrays	• multiply decimal tenths and 1-digit whole numbers using base 10 block arrays
			• multiply decimal hundredths and 1-digit whole numbers using base 10 block arrays

Learning Journey	Step	Content	Description
			• multiply decimal thousandths and 1-digit whole numbers using base 10 block arrays
Divide decimals to thousandths			
Dividing decimals & whole numbers, base 10	1	Dividing decimals to thousandths and 1-digit whole numbers using base 10 block arrays	• divide decimal tenths and 1-digit whole numbers using base 10 block arrays
			• divide decimal hundredths and 1-digit whole numbers using base 10 block arrays
			• divide decimal thousandths and 1-digit whole numbers using base 10 block arrays
Dividing decimals to thousandths	1	Dividing tenths and 1-digit whole numbers using mental strategies	• use efficient mental strategies to divide tenths and 1-digit whole numbers
	2	Dividing hundredths and 1-digit whole numbers using mental strategies	• use efficient mental strategies to divide hundredths and 1-digit whole numbers
	3	Dividing thousandths and 1-digit whole numbers using mental strategies	• use efficient mental strategies to divide thousandths and 1-digit whole numbers
	4	Dividing 1-digit whole numbers and decimals to thousandths using mental strategies	• divide decimals to thousandths by a 1-digit whole number where the result is a terminating decimal, eg $5.25 \div 5 = 1.05$
			• solve word problems involving the division of decimals to thousandths by 1-digit whole numbers, including those involving money
			• use estimation and rounding to check the reasonableness of answers

9. Explain and apply the order of operations, excluding exponents, with and without technology (limited to whole numbers).			
Quest: Order of operations with whole numbers			
Learning Journey	Steps	Content	Description
Order of operations, addition & subtraction	1	Introducing order of operations involving addition and subtraction	• solve number sentences involving addition and subtraction
Order of operations, multiplication & division	1	Introducing order of operations involving multiplication and division	• solve number sentences involving multiplication and division
Order of operations, 4 operations	1	Introducing order of operations involving all 4 operations	• solve number sentences involving all 4 operations
Order of operations, grouping symbols	1	Introducing order of operations involving grouping symbols	• explore the use of brackets and the order of operations in number sentences

Learning Journey	Step	Content	Description
			• use the term 'operations' to describe collectively the processes of addition, subtraction, multiplication, and division
			• recognize 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
			• recognize when grouping symbols are not necessary
	3	Introducing order of operations involving multiple grouping symbols	• explore the use of grouping symbols and the order of operations in number sentences
			• recognize 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
Situational questions, order of operations	1	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

24 Patterns & Relations (Patterns)

24.1 Use patterns to describe the world and to solve problems.

1. Represent and describe patterns and relationships, using graphs and tables.			
Quest: Patterns in tables of values & graphs			
Learning Journey	Steps	Content	Description
Creating a table of values, visual pattern	1	Using a table of values to record number patterns made using shapes	• complete a table of values for a number pattern made using shapes and describe the pattern in words
			• describe the number pattern in a variety of ways and record descriptions using words, eg 'It looks like the multiplication facts for 4'
			• determine the rule to describe the pattern by relating the bottom number to the top number in a table, eg 'You multiply the number of squares by 4 to get the number of matches'
			• use the rule to calculate the corresponding value for a larger number, eg 'How many matches are needed to create 100 squares?'
Representing linear patterns, tables & graphs	1	Representing linear growing patterns	• represent linear growing patterns, using a variety of tools, eg concrete materials, paper and pencil, calculators, spreadsheets
			• make a table of values using the term number and the term
			• plot the coordinates on a graph
			• write a pattern rule using words

2. Demonstrate an understanding of the relationships within tables of values to solve problems.			
Quest: Relationships within tables			
Learning Journey	Steps	Content	Description
Determining missing values in a table of values	1	Interpreting a table of values for number patterns involving 1 operation in the term-to-term rule	• describe the pattern in a variety of ways and record descriptions in words, eg 'It goes up by ones, starting from four'
			• interpret explanations written by peers and teachers that accurately describe shape and number patterns
			• use the rule to predict the next few terms and predict whether a particular value will be in the pattern
			• find missing terms in a the sequence
Making predictions about linear growing patterns	1	Making predictions about linear growing patterns	• make predictions about linear growing patterns, through investigation with concrete materials
			• explain reasoning for predictions

25 Patterns & Relations (Variables & Equations)

25.1 Represent algebraic expressions in multiple ways.

3. Represent generalizations arising from number relationships, using equations with letter variables.			
Quest: Patterns, expressions & equations			
Learning Journey	Steps	Content	Description
Writing an equation to represent a table of values	1	Developing and representing the general term of a linear growing pattern with 2 operations	• develop and represent the general term of a linear growing pattern, using algebraic expressions and equations involving 2 operations
Writing expressions, rule for a pattern	1	Identifying and writing the rule for increasing patterns as an algebraic expression	• identify and write the rule for increasing patterns as an algebraic expression
	2	Identifying and writing the rule for decreasing patterns as an algebraic expression	• identify and write the rule for decreasing patterns as an algebraic expression

4. Express a given problem as an equation in which a letter variable is used to represent an unknown number.			
Quest: Understand variables			
Learning Journey	Steps	Content	Description
Matching equations & word problems	1	Introducing simple variables using 1-step equations and word problems	• express a 1-step problem as an equation using variables
			• matching an equation including variables to a word problem
Writing & solving equations given a problem	1	Writing and solving equations for real-world problems of the form $x + p = q$ and $px = q$ (nonnegative rational numbers)	• write and solve equations for real-world problems of the form $x + p = q$ and $px = q$ (nonnegative rational numbers)

5. Demonstrate and explain the meaning of preservation of equality, concretely and pictorially.			
Quest: Preservation of equality			
Learning Journey	Steps	Content	Description
Solving 1-step equations	1	Solving linear equations using inverse operations involving 1 step of addition or subtraction with positive integer solutions only	• solve linear equations using inverse operations involving 1 step of addition or subtraction with positive integer solutions only
	2	Solving linear equations using inverse operations involving 1 step of division needed with positive integer solutions only	• solve linear equations using inverse operations involving 1 step of division needed with positive integer solutions only
	3	Solving 1-step equations with whole number coefficients and solutions	• solve 1-step equations with whole number coefficients and solutions

Learning Journey	Step	Content	Description
Solving 1-step equations using a balance	1	Solving 1-step equations using a balance	• solve 1-step equations using a balance
Solving 1-step equations using algebra tiles	1	Solving 1-step equations using algebra tiles	• solve 1-step equations using algebra tiles
Understanding the preservation of equality	1	Demonstrating an understanding of equivalence and the preservation of equality or 'balance'	• understand and use the '=' sign
			• model preservation of equality concretely
			• model preservation of equality pictorially
			• model preservation of equality symbolically
			• understand that applying the same operation to both sides of an equation preserves equality
Creating equivalent forms of an equation	1	Creating and recording equivalent forms of an equation by applying the preservation of equality	• create and record equivalent forms of an equation by applying the preservation of equality (single operation)
			• verify equivalent forms of an equation pictorially (eg 3b = 12 is the same as 3b + 5 = 12 + 5; 2r = 7 is the same as 3(2r) = 3(7))

26 Shape & Space (Measurement)

26.1 Use direct and indirect measurement to solve problems.

1. Demonstrate an understanding of angles by: identifying examples of angles in the environment, classifying angles according to their measure, estimating the measure of angles, using 45°, 90° and 180° as reference angles, determining angle measures in degrees, drawing and labelling angles when the measure is specified.			
Quest: Angle measurement & classification			
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
			• categorize 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 full rotation	• understand and describe angles greater than or equal to 180°
			• identify and name angles as acute, right, obtuse, straight, reflex, and full rotation
			• categorize angles as acute, right, obtuse, straight, reflex, and full rotation
			• draw and create angles of a given size: acute, right, obtuse, straight, reflex, and full rotation (no protractors)
	4	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

2. Demonstrate that the sum of interior angles is: 180° in a triangle, 360° in a quadrilateral.			
Quest: Sum of interior angles			
Learning Journey	Steps	Content	Description
Finding the missing angle of a triangle	1	Calculating interior angle sum of a triangle	• explore through measurement the sum of interior angles of a triangle
			• calculate an unknown angle represented by a variable within a triangle, given the other 2 angles

Learning Journey	Step	Content	Description
Finding the missing angle of a quadrilateral	1	Finding the missing interior angle of a quadrilateral	• explore, through measurement, the sum of the interior angles of a quadrilateral
			• calculate an unknown angle represented by a variable within a quadrilateral, given the other 3 angles

3. Develop and apply a formula for determining the: perimeter of polygons, area of rectangles, volume of right rectangular prisms.			
Quest: Relationships between area & perimeter			
Learning Journey	Steps	Content	Description
Solving perimeter & area problems	1	Comparing areas and perimeters of rectangles	• construct different rectangles with the same area and compare their perimeters
			• construct different rectangles with the same perimeters and compare their areas
			• investigate the relationship between the side lengths of a rectangle and its perimeter and area
			• investigate the relationship between the side lengths of a square and its perimeter and area
	2	Solving problems relating to perimeter and area of rectangles and squares	• pose and solve problems that require the distinction between perimeter and area
			• draw a number of rectangles of differing areas with the same perimeter; compare with squares
			• determine that only one square is possible if given the area of a square; compare with rectangles
			• investigate what happens to the area of the shape if the length of one pair of opposite sides of the shape are doubled or halved
Volume of rectangular prisms			
Finding the volume of rectangular prisms	1	Finding the volumes of rectangular prisms, given their perpendicular heights and the dimensions of their uniform cross-sections	• find the volumes of rectangular prisms, given their perpendicular heights and the dimensions of their uniform cross-sections
	2	Finding the volume of a rectangular prism given the area of the uniform cross-section and perpendicular height in the same units	• find the volume of a rectangular prism given the area of the uniform cross-section and perpendicular height in the same units

Learning Journey	Step	Content	Description
Finding the missing dimension, rectangular prisms	1	Finding the height or area of the rectangular prism uniform cross-section given the volume in the same units	• find the height or area of the rectangular prism uniform cross-section given the volume in the same units
Area of rectangles			
Finding the area of rectangles	1	Developing a multiplicative formula for area of a rectangle using metric units	• connect the area of a rectangle to the multiplication of its side lengths and develop a formula (in words) for the area of a rectangle, e.g., Area of rectangle = length x width
			• 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
			• explain methods for finding the area of a square as a type of rectangle; connect multiplying equal sides to the concept of square numbers
	2	Applying the formula for the area of a rectangle	• develop the formula for the area of a rectangle, $A = l \times w$ (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
Perimeter of polygons			
Determining the perimeter of polygons	1	Calculating the perimeters of rectangles	• use the term 'dimensions' to describe the 'lengths' and 'widths' of rectangles and squares
			• measure and calculate the perimeter of a large rectangular section of the school
			• recognize that rectangles with the same perimeter may have different dimensions
			• recognize that rectangles with dimensions given in different units may have the same perimeter
			• explore different methods of finding the perimeter of rectangles
			• create a rule to find the perimeter of any rectangle

Learning Journey	Step	Content	Description
	2	Calculating the perimeters of regular polygons	• explain the relationship between the lengths of the sides and the perimeters for polygons (including equilateral triangles and squares)
			• record calculations used to find the perimeters of two-dimensional shapes
			• find the length of 1 unknown side of a shape given the perimeter

27 Shape and Space (Measurement)

27.1 Use direct and indirect measurement to solve problems.

1. Demonstrate an understanding of angles by: identifying examples of angles in the environment, classifying angles according to their measure, estimating the measure of angles, using 45°, 90° and 180° as reference angles, determining angle measures in degrees, drawing and labelling angles when the measure is specified.			
Quest: Angles up to 360°			
Learning Journey	Steps	Content	Description
Measuring angles with a circular protractor	1	Using a circular protractor to understand a 1-degree angle as $\frac{1}{360}$ of a turn	• use a circular protractor to understand a 1-degree angle as $\frac{1}{360}$ of a turn

28 Shape & Space (3-D Objects & 2-D Shapes)

28.1 Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.

4. Construct and compare triangles, including: scalene, isoscele, equilateral, right, obtuse, acute in different orientations.			
Quest: Classification of triangles			
Learning Journey	Steps	Content	Description
Classifying triangles by their sides & angles	1	Classifying triangles by their sides and angles	• identify and name right, equilateral, isosceles and scalene triangles
			• compare and describe features of the sides and angles of equilateral, isosceles and scalene triangles
			• identify triangles that are right as well as scalene or isosceles
			• explore, by measurement, side and angle properties of equilateral, isosceles and scalene triangles

5. Describe and compare the sides and angles of regular and irregular polygons.			
Quest: Regular & irregular polygons			
Learning Journey	Steps	Content	Description
Understanding regular & irregular polygons	1	Representing and describing regular polygons	• use the term 'two-dimensional' to describe plane (flat) shapes
			• draw or represent two-dimensional shapes in different orientations using a variety of materials, with and without the use of digital technologies
			• name two-dimensional shapes in different orientations, eg triangles, quadrilaterals, pentagons, hexagons, octagons and describe the number of angles and/or sides
	2	Identifying regular and irregular two-dimensional shapes	• identify a regular shape from a group of irregular shapes, eg a regular pentagon in a group of irregular pentagons
			• explain the difference between regular and irregular two-dimensional shapes
			• identify and name two-dimensional shapes presented as either regular or irregular shapes in different orientations

29 Shape & Space (Transformations)

29.1 Describe and analyze position and motion of objects and shapes.

6. Perform a combination of translations, rotations and/or reflections on a single 2-D shape, with and without technology, and draw and describe the image.			
Quest: Combinations of transformations			
Learning Journey	Steps	Content	Description
Identifying combinations of transformations	1	Identifying a sequence of 2 transformations	• identify a sequence of 2 transformations used to move a shape from 1 position to another
			• perform a sequence of 2 transformations used to move a shape from 1 position to another without the use of digital technology
			• perform a sequence of 2 transformations used to move a shape from 1 position to another using digital technology

7. Perform a combination of successive transformations of 2-D shapes to create a design, and identify and describe the transformations.			
Quest: Recognize tessellations			
Learning Journey	Steps	Content	Description
Recognizing tessellations	1	Recognizing tessellations	• recognize and describe transformations in tessellating designs consisting of a single shape
			• create and record tessellating designs using reflections on a single shape
			• determine whether a shape will or will not tessellate

8. Identify and plot points in the first quadrant of a Cartesian plane, using whole number ordered pairs.			
Quest: The Cartesian plane, first quadrant			
Learning Journey	Steps	Content	Description
Plotting points in the first quadrant	1	Plotting points in the Cartesian coordinate system in the first quadrant only	• plot points on a Cartesian coordinate plane using x and y coordinates
	2	Recording the position of points on a Cartesian plane using x and y coordinates	• record the position of points on a Cartesian plane using x and y coordinates
Plotting points that create a shape	1	Plotting points from coordinates to create a shape, first quadrant only	• plot a sequence of coordinates to create a shape in the first quadrant
	2	Finding the missing coordinate of a figure in the first quadrant only	• find the missing coordinate of a figure with a Cartesian plane (first quadrant only)

9. Perform and describe single transformations of a 2-D shape in the first quadrant of a Cartesian plane (limited to whole number vertices).			
Quest: Transformations in the first quadrant			
Learning Journey	Steps	Content	Description
Investigating translations in the first quadrant	1	Investigating translations in the first quadrant	• identify the one-step transformation used to move a shape from 1 position to another
			• follow instructions to position a shape on a grid
			• identify the instructions required to translate a shape on a grid using suitable language such as left/right, up/down, number of squares moved
Identifying reflections in the first quadrant	1	Identifying 2D reflections on a grid or Cartesian plane (first quadrant only)	• identify 2D shapes in diagrams and on Cartesian planes
Identifying rotations in the first quadrant	1	Identifying rotations on 2D shapes on a grid or Cartesian plane (first quadrant only)	• identify rotations on 2D shapes on a grid or Cartesian plane (first quadrant only)

30 Statistics & Probability (Data Analysis)

30.1 Collect, display and analyze data to solve problems.

1. Create, label and interpret line graphs to draw conclusions.			
Quest: Construct line graphs			
Learning Journey	Steps	Content	Description
Constructing a line graph	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
			• mark equal spaces on the axes when constructing graphs, and use the scale to label the markers
			• interpret data in a line graph representing primary data; ask and answer questions related to the data in the display; draw conclusions
Interpreting data in a line graph	1	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
Choosing graphs, continuous vs discrete data	1	Determining whether a set of data should be represented by a line graph (continuous data) or a series of points (discrete data)	• determine whether a set of data should be represented by a line graph (continuous data) or a series of points (discrete data)
			• describe patterns seen in a given line graph or a graph of discrete data points, and describe a situation that the graph might represent
	2	Constructing a graph (line graph or a graph of discrete data points) to represent data given in a table for a particular situation	• construct a graph (line graph or graph of discrete data points) to represent data given in a table for a particular situation
			• interpret (through interpolation and extrapolation) the line graph or graphs of discrete data points for a situation to make decisions or solve problems

2. Select, justify and use appropriate methods of collecting data, including: questionnaires, experiments, databases, electronic media.			
Quest: Data collection			
Learning Journey	Steps	Content	Description
Data collection: questionnaires	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

3. Graph collected data, and analyze the graph to solve problems.			
Quest: Select data displays			
Learning Journey	Steps	Content	Description
Selecting data displays	1	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

31 Statistics & Probability (Chance & Uncertainty)

31.1 Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.

4. Demonstrate an understanding of probability by: identifying all possible outcomes of a probability experiment, differentiating between experimental and theoretical probability, determining the theoretical probability of outcomes in a probability experiment, determining the experimental probability of outcomes in a probability experiment, comparing experimental results with the theoretical probability for an experiment.			
Quest: Theoretical & experimental probability			
Learning Journey	Steps	Content	Description
Comparing observed & expected frequencies	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
			• recognize that some random generators have outcomes that are not equally likely and discuss the effect on expected outcomes
Probability of 0 and 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
Predicting the probability of a specific outcome	1	Predicting single events or outcomes	• predict single events or outcomes
Listing the sample space for an event	1	Identifying the sample space for a probability experiment involving 1 event	• identify the sample space for a probability experiment involving 1 event

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