

# Mathletics

## 3P Learning Progressions

### Understanding Practice and Fluency (UPF)



**Grades 3 – 6 | Global**

June, 2021

**Mathletics**

# Mathletics

3P Learning Progression

Understanding, Practice and Fluency (UPF)

June, 2021

# Contents

<b>I</b>	<b>Grade 3</b>	<b>2</b>
1	Number	2
2	Measures	29
3	Geometry	37
4	Statistics and data	42
<b>II</b>	<b>Grade 4</b>	<b>46</b>
5	Number	46
6	Measures	72
7	Geometry	81
8	Operations & Algebraic Thinking	84
9	Statistics and data	85
<b>III</b>	<b>Grade 5</b>	<b>88</b>
10	Number	88
11	Measurement	113
12	Geometry	121
13	Operations & Algebraic Thinking	127
14	Statistics and data	128
<b>IV</b>	<b>Grade 6</b>	<b>133</b>
15	Number	133
16	Measurement	151
17	Geometry	157
18	Operations and Algebraic Thinking	160
19	Ratio and Proportion	162
20	Statistics and data	163

# Part I

## Grade 3

### 1 Number

Number and place value			
Numbers up to 4 digits			
Learning Journey	Steps	Content	Details
Reading and writing numbers up to 4 digits	1	Reading and writing 4-digit numbers using words and numerals	<ul style="list-style-type: none"> <li>• write a given 4-digit number in words, eg 4567 as four thousand, four hundred and sixty-seven</li> <li>• write the numerals for a 4-digit number given in words</li> </ul>
	2	Representing 4-digit numbers using words, numerals and objects	<ul style="list-style-type: none"> <li>• model a given 4-digit number using concrete materials, pictures or drawings</li> <li>• write the numerals in words, eg 'seven thousand, three hundred and fifty-three' for a 4-digit number represented using place value equipment or using pictures, drawings</li> </ul>
Place value up to 4 digit numbers	1	Identifying numbers before and after up to 4-digit numbers (within 10 000)	<ul style="list-style-type: none"> <li>• 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'</li> <li>• 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'</li> <li>• 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'</li> </ul>
	2	Identifying the place value of digits in 4-digit numbers	<ul style="list-style-type: none"> <li>• write the numeral for a 4-digit number modelled using place value equipment</li> <li>• identify the digit in the thousands, hundreds, tens or ones column for a given 4-digit number</li> <li>• identify, record and model a number using place value clues, eg 'an 8 in the thousands, 5 in the hundreds and a 2 in the ones' as 8502</li> <li>• recognise the role of zero as a placeholder</li> <li>• create the smallest and largest numbers possible using 4 digits</li> </ul>
Comparing and ordering numbers to 4 digits	1	Comparing numbers to 10 000 using models and inequality symbols	<ul style="list-style-type: none"> <li>• model and compare two 4-digit numbers using place value equipment</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>compare two numbers of up to 4 digits and describe using the terms and symbols: greater than (&gt;) or less than (&lt;); explain the comparison using place value reasoning</li> </ul>
	2	Ordering numbers to 10 000	<ul style="list-style-type: none"> <li>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</li> <li>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</li> </ul>
Partitioning up to 4 digit numbers	1	Using place value to partition 4-digit numbers	<ul style="list-style-type: none"> <li>use place value equipment to partition a given 4-digit number into thousands, hundreds, tens and ones</li> </ul>
			<ul style="list-style-type: none"> <li>describe a 4-digit number using words, eg 9523 as '9 thousands, 5 hundreds, 2 tens and 3 ones'</li> </ul>
			<ul style="list-style-type: none"> <li>write a 4-digit number in expanded notation, eg 7523 as <math>7000 + 500 + 20 + 3</math></li> </ul>
			<ul style="list-style-type: none"> <li>write the numeral for a number represented by expanded notation</li> <li>recognise zero as a placeholder</li> </ul>
Partitioning up to 4 digit numbers (non-standard)	1	Partitioning 4-digit numbers using non-standard partitioning	<ul style="list-style-type: none"> <li>use place value equipment to partition a given 4-digit number using non-standard partitioning, eg 2375 as 2 thousands, 1 hundred and 275 ones or <math>2000 + 100 + 275</math></li> </ul>
			<ul style="list-style-type: none"> <li>model and identify a number from non-standard partitioning, eg recognise 3 hundreds, 4 tens and 27 ones or <math>300 + 40 + 27</math> as 367</li> </ul>
Rounding 4 digit numbers	1	Rounding numbers up to 10 000 to the nearest 1000	<ul style="list-style-type: none"> <li>model a 4-digit number and recognise which thousand it is nearer to; explain reasoning</li> <li>round a 4-digit number to the nearest 1000; recognise the digit in the hundreds column as the key digit</li> </ul>
	2	Rounding numbers up to 10 000 to the nearest 10, 100 or 1000	<ul style="list-style-type: none"> <li>round a 4-digit number to the nearest 10, 100 or 1000; explain the rounding</li> </ul>
<b>Number patterns</b>			
Counting in 10s, 100s and 1000s	1	Counting by tens and hundreds using models, number lines and charts	<ul style="list-style-type: none"> <li>count forwards and backwards in tens, on and off the decade, with 2-digit, 3-digit and 4-digit numbers using number lines and number charts</li> </ul>
			<ul style="list-style-type: none"> <li>count forwards and backwards in hundreds, on the decade, with 3-digit and 4-digit numbers using number lines and number charts</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>count forwards and backwards in hundreds, on and off the decade, with 3-digit and 4-digit numbers using number lines and number charts</li> </ul>
	2	Counting by tens and hundreds	<ul style="list-style-type: none"> <li>count forwards and backwards in tens, on and off the decade, with 2-digit, 3-digit and 4-digit numbers</li> <li>count forwards and backwards in hundreds, on the decade, with 3-digit and 4-digit numbers</li> <li>count forwards and backwards in hundreds, on and off the decade, with 3-digit and 4-digit numbers</li> </ul>
	3	Counting by skip counting forwards or backwards by 100s from any multiple of 100 up to 1000	<ul style="list-style-type: none"> <li>use concrete materials, models, drawings, number lines/charts to skip count forwards or backwards by 100s from any multiple of 100 up to 1000</li> <li>skip count forwards or backwards by 100s from any multiple of 100 using understanding of the number sequence and place value up to 1000</li> <li>recognise an error in the skip counting sequence</li> </ul>
	4	Finding numbers 10 or 100 before and after up to 1000	<ul style="list-style-type: none"> <li>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</li> <li>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</li> </ul>
	5	Counting by skip counting forwards or backwards by 1000s to 10 000	<ul style="list-style-type: none"> <li>use Base 10, models, drawings, number lines/charts to skip count forwards or backwards by 1000s from zero to 10 000</li> <li>recognise an error in the skip counting sequence</li> </ul>
Odd and even numbers	1	Investigating odd and even numbers	<ul style="list-style-type: none"> <li>model odd and even numbers of up to 2 digits using arrays with 2 rows</li> <li>compare and describe the difference between models of even numbers and models of odd numbers</li> <li>recognise the connection between even numbers and the multiplication facts for 2</li> </ul>
	2	Identifying odd and even numbers up to and including 4 digits	<ul style="list-style-type: none"> <li>recognise the significance of the final digit of a whole number in determining whether a given number is even or odd</li> <li>identify even or odd numbers up to and including 4 digits</li> </ul>

Learning Journey	Steps	Content	Details
	3	Identifying odd and even number patterns (add in number lines and number charts)	<ul style="list-style-type: none"> <li>• model even and odd numbers of up to 20 using arrays with 2 rows</li> </ul>
			<ul style="list-style-type: none"> <li>• compare and describe the difference between the models of odd and even numbers</li> </ul>
			<ul style="list-style-type: none"> <li>• recognise the connection between even numbers, doubles and the 2 times-tables; demonstrate the connection with words, models or numerals</li> </ul>
			<ul style="list-style-type: none"> <li>• use the final digit of a whole number to determine whether a given number is even or odd (up to four digits)</li> </ul>
Identifying and creating number patterns	1	Identifying and creating additive number patterns (3s, 4s, 6s, 7s, 8s, 9s, from any starting point within 100)	<ul style="list-style-type: none"> <li>• identify additive number patterns, eg patterns that increase in 3s, 4s, 6s, 7s, 8s and 9s from any starting point</li> </ul>
			<ul style="list-style-type: none"> <li>• describe the rule for a forwards (additive) number pattern, eg 'It goes up by 3s'</li> </ul>
			<ul style="list-style-type: none"> <li>• continue and create an additive number pattern</li> </ul>
	2	Identifying and creating subtractive number patterns (3s, 4s, 6s, 7s, 8s, 9s, from any starting point within 100)	<ul style="list-style-type: none"> <li>• identify subtractive number patterns, eg patterns that decrease by 3s, 4s, 6s, 7s, 8s and 9s from any starting point</li> </ul>
			<ul style="list-style-type: none"> <li>• describe the rule for a backwards (subtractive) number pattern, eg 'It goes down by 3s'</li> </ul>
			<ul style="list-style-type: none"> <li>• continue and create a subtractive number pattern represented in numbers, on a number line or expressed in words, eg 'make a pattern that starts at 20 and shrinks by subtracting 2 each time'</li> </ul>
	3	Identifying and creating additive and subtractive number patterns (3s, 4s, 6s, 7s, 8s, 9s, from any starting point within 100)	<ul style="list-style-type: none"> <li>• identify additive or subtractive number patterns on a number line, hundreds chart or calendar, eg patterns that increase in 3s, 4s, 6s, 7s, 8s and 9s from any starting point</li> </ul>
			<ul style="list-style-type: none"> <li>• describe the rule for a forwards (additive) or backwards (subtractive) number pattern, eg 'It goes up by 3s'</li> </ul>
			<ul style="list-style-type: none"> <li>• continue and create an additive or subtractive number pattern represented in numbers, on a number line or expressed in words, eg 'make a pattern that starts at 0 and grows by adding 7 each time'</li> </ul>
Exploring number patterns in tables and charts	1	Exploring number patterns represented in addition tables and charts	<ul style="list-style-type: none"> <li>• identify and explore patterns in an addition table and explain using properties of operations</li> </ul>

Learning Journey	Steps	Content	Details
	2	Exploring number patterns represented in multiplication tables and charts	<ul style="list-style-type: none"> <li>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</li> </ul>

Addition and Subtraction			
Adding and subtracting within 100			
Learning Journey	Steps	Content	Details
Adding within 100	1	Recalling number bonds to 30	<ul style="list-style-type: none"> <li>use known facts and number patterns to recall bonds to 30 eg <math>18 + 2 = 20</math> so <math>28 + 2 = 30</math></li> </ul>
	2	Adding 3 or more single-digit numbers	<ul style="list-style-type: none"> <li>use appropriate strategies to add 3 or more single-digit numbers; including changing the order, doubles if appropriate, bridging to a ten</li> <li>explain and justify strategies used</li> </ul>
	3	Adding and subtracting 3 or more single-digit numbers using compatible numbers	<ul style="list-style-type: none"> <li>use compatible numbers, eg <math>4 + 2 + 8 - 6</math> as <math>6 + 8 - 6 = 8</math></li> </ul>
	4	Adding multiple single-digit numbers	<ul style="list-style-type: none"> <li>use the associative property of addition to make easier additions when possible, eg doubles or near doubles, pairs that add to a ten</li> </ul>
Adding two 2-digit numbers by bridging	1	Bridging to ten to add two 2-digit numbers using models for support	<ul style="list-style-type: none"> <li>add to the nearest ten first then add the rest, using models for support, eg <math>28 + 17</math> as <math>28 + 2 = 30</math> and <math>30 + 15 = 45</math></li> <li>record and explain the use of the strategy</li> </ul>
Number pairs to 100	1	Modelling pairs that add to 100	<ul style="list-style-type: none"> <li>use place value equipment to model pairs that add to 100, eg 63 and 37</li> <li>recognise that the ones make an extra ten when added</li> </ul>
	2	Adding to make 100	<ul style="list-style-type: none"> <li>find pairs of numbers that add to 100 (multiples of 5), eg 45 and 55</li> <li>find pairs of numbers that add to 100, eg 42 and 58</li> <li>find the missing number to add to 100 when 1 number is given</li> </ul>
	3	Subtracting from 100	<ul style="list-style-type: none"> <li>subtract 1 number from 100 (multiple of 5), eg <math>100 - 35 = 65</math></li> <li>subtract 1 number from 100, eg <math>100 - 29 = 71</math></li> </ul>
Adding within 1000			
Adding up to 3-digit numbers - jump strategy	1	Adding 2-digit and 3-digit numbers using place value partitioning on a number line (jump strategy)	<ul style="list-style-type: none"> <li>model and solve the addition of a 2-digit and 3-digit number using an empty number line, eg <math>823 + 56</math> as <math>823 + 50 = 873</math>, <math>873 + 6 = 879</math></li> </ul>
	2	Adding 2-digit and 3-digit numbers mentally using place value understanding (jump strategy)	<ul style="list-style-type: none"> <li>mentally solve addition problems involving 2-digit and 3-digit numbers using a jump strategy, eg <math>823 + 56</math> as <math>823 + 50 = 873</math>, <math>873 + 6 = 879</math></li> <li>record and explain the use of the strategy</li> </ul>



Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• check calculations using the inverse operation</li> </ul>
	3	Adding up to 3-digit numbers mentally using place value understanding (jump strategy)	<ul style="list-style-type: none"> <li>• solve the addition of two 3-digit numbers using a jump strategy, eg <math>823 + 356</math> as <math>823 + 300 = 1123</math>, <math>1123 + 50 = 1173</math>, <math>1173 + 6 = 1179</math></li> <li>• explain and justify the use of the strategy</li> </ul>
Adding up to two 3-digit numbers - split strategy	1	Adding a 2-digit and 3-digit number using place value models (split strategy)	<ul style="list-style-type: none"> <li>• model the addition of a 2-digit and 3-digit number using a split strategy with or without crossing tens; use place value equipment, money or diagrams</li> <li>• solve addition problems using a split strategy, eg <math>265 + 27</math> as <math>260 + 20</math> and <math>5 + 7</math>, <math>280 + 12 = 292</math></li> <li>• record and explain the use of the strategy</li> </ul>
	2	Adding up to two 3-digit numbers mentally using place value understanding (split strategy)	<ul style="list-style-type: none"> <li>• solve addition problems using a split strategy, eg <math>265 + 327</math> as <math>200 + 300</math>, <math>60 + 20</math> and <math>5 + 7</math>, <math>500 + 80 + 12 = 592</math></li> <li>• record and explain the strategy using numerals, models and/or diagrams</li> </ul>
Add up to 3-digit numbers rounding & compensating	1	Introducing addition using rounding and compensating with two 2-digit numbers	<ul style="list-style-type: none"> <li>• add two 2-digit numbers where 1 number is close to a ten (digit in the ones column is 7, 8 or 9)</li> <li>• round 1 number to the next 10, carry out the addition and adjust the answer to compensate for the original rounding, eg <math>35 + 29</math> as <math>35 + 30 - 1</math></li> <li>• record the strategy using numerals, models and/or diagrams and explain the need to compensate</li> </ul>
	2	Adding up to two 3-digit numbers using rounding and compensating	<ul style="list-style-type: none"> <li>• add up to two 3-digit numbers where 1 number is close to a hundred (ends in 97, 98 or 99)</li> <li>• round 1 number to the next 100, carry out the addition and adjust the answer to compensate for the original rounding, eg <math>398 + 23</math> as <math>400 + 23 - 2</math></li> <li>• record the strategy using numerals, models and/or diagrams and explain the need to compensate</li> </ul>
Adding up to 3-digit numbers - bridging to 10	1	Adding 2 numbers up to 3-digits using bridging to ten	<ul style="list-style-type: none"> <li>• 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 <math>368 + 25</math> as <math>368 + 2 + 23</math></li> <li>• record and explain the strategy using numerals, models and/or diagrams</li> </ul>

Learning Journey	Steps	Content	Details
Adding two 3-digit numbers - formal method	1	Adding two 3-digit numbers using columnar addition, not crossing the 10 or 100	<ul style="list-style-type: none"> <li>add two 3-digit numbers using columnar addition, not crossing the 10 or 100</li> </ul>
<b>Subtracting within 1000</b>			
Subtracting 2-digit numbers - models	1	Bridging to ten to subtract two 2-digit numbers using models for support	<ul style="list-style-type: none"> <li>subtract to the nearest ten first then subtract the rest using models for support, eg <math>33 - 18</math> as <math>33 - 3 = 30</math>, <math>30 - 10 = 20</math>, <math>20 - 5 = 15</math></li> <li>record and explain the use of the strategy</li> </ul>
Subtracting up to 3-digit numbers - jump strategy	1	Subtracting a 2-digit number from a 3-digit number using place value partitioning on a number line (jump strategy)	<ul style="list-style-type: none"> <li>model and solve the subtraction of a 2-digit number from a 3-digit number using an empty number line, eg <math>823 - 56</math> as <math>823 - 50 = 773</math>, <math>773 - 6 = 767</math></li> </ul>
	2	Subtracting a 2-digit number from a 3-digit number mentally using place value understanding (jump strategy)	<ul style="list-style-type: none"> <li>mentally solve subtraction problems involving 2-digit and 3-digit numbers using place value partitioning, eg <math>823 - 56</math> as <math>823 - 50 = 773</math>, <math>773 - 6 = 767</math></li> <li>record and explain the use of the strategy</li> <li>check calculations using the inverse operation</li> </ul>
	3	Subtracting up to 3-digit numbers mentally using place value understanding (jump strategy)	<ul style="list-style-type: none"> <li>solve the subtraction of two 3-digit numbers using a jump strategy, eg <math>823 - 356</math> as <math>823 - 300 = 523</math>, <math>523 - 50 = 473</math>, <math>473 - 6 = 467</math></li> <li>explain and justify the use of the strategy</li> </ul>
Subtracting up to 3-digit numbers - split strategy	1	Subtracting a 2-digit number from a 3-digit number using place value models (split strategy)	<ul style="list-style-type: none"> <li>model the subtraction of a 2-digit and 3-digit number using a split strategy; place value equipment, money or diagrams</li> <li>solve subtraction problems using a split strategy, eg <math>265 - 21</math> as <math>260 - 20 = 240</math> and <math>5 - 1 = 4</math>, <math>240 + 4 = 244</math></li> <li>record and explain the use of the strategy</li> </ul>
	2	Subtracting two 3-digit numbers mentally using place value understanding (split strategy)	<ul style="list-style-type: none"> <li>solve subtraction problems using a split strategy, eg <math>548 - 127</math> as <math>500 - 100 = 400</math> and <math>40 - 20 = 20</math> and <math>8 - 7 = 1</math>, <math>400 + 20 + 1 = 421</math></li> <li>record and explain the strategy using numerals, models and/or diagrams</li> </ul>
Subtract up to 3-digit numbers - round & compensate	1	Introducing subtraction using rounding and compensating with two 2-digit numbers	<ul style="list-style-type: none"> <li>subtract two 2-digit numbers where 1 number is close to a ten</li> <li>round 1 number to the next 10, carry out the subtraction and adjust the answer to compensate for the original rounding, eg <math>33 - 19</math> as <math>33 - 20 = 13</math> and <math>13 + 1 = 14</math> or <math>81 - 35</math> as <math>80 - 35 = 45</math> and <math>45 + 1 = 46</math></li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"><li>record the strategy using numerals, models and/or diagrams and explain the need to compensate</li></ul>
	2	Subtracting up to two 3-digit numbers using rounding and compensating	<ul style="list-style-type: none"><li>record the strategy using numerals, models and/or diagrams and explain the need to compensate</li></ul>
			<ul style="list-style-type: none"><li>subtract up to two 3-digit numbers where 1 number is close to a hundred (ends in 97, 98 or 99)</li></ul>
			<ul style="list-style-type: none"><li>round 1 number to the next 100, carry out the subtraction and adjust the answer to compensate for the original rounding, eg <math>398 - 23</math> as <math>400 - 23 + 2</math></li></ul>
			<ul style="list-style-type: none"><li>record the strategy using numerals, models and/or diagrams and explain the need to compensate</li></ul>
Subtracting up to 3-digit numbers - bridging to 10	1	Subtracting 2 numbers up to 3-digits using bridging to ten	<ul style="list-style-type: none"><li>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 <math>362 - 25</math> as <math>362 - 2 - 23</math></li></ul>
			<ul style="list-style-type: none"><li>record and explain the strategy using numerals, models and/or diagrams</li></ul>
Adding and subtracting within 1000			
Add/subtract 2-digit numbers - bridging strategies	1	Bridging to ten to mentally add and subtract two 2-digit numbers	<ul style="list-style-type: none"><li>add or subtract to the nearest ten first then add or subtract the rest, using models for support, eg <math>28 + 17</math> as <math>28 + 2 = 30</math> and <math>30 + 15 = 45</math></li></ul>
			<ul style="list-style-type: none"><li>check calculations using the inverse operation</li></ul>
	2	Using a bridging strategy with start unknown or change unknown problems	<ul style="list-style-type: none"><li>use a bridging strategy to solve addition and subtraction problems where the change is unknown, eg <math>29 + ? = 81</math></li></ul>
			<ul style="list-style-type: none"><li>use a bridging strategy to solve addition and subtraction problems where the start is unknown, eg <math>? + 29 = 81</math> becomes <math>29 + ? = 81</math></li></ul>
Add/subtract up to 3-digit numbers - jump strategy	1	Adding and subtracting a 2-digit and 3-digit number using place value partitioning on a number line (jump strategy)	<ul style="list-style-type: none"><li>model and solve the addition or subtraction of a 2-digit number from a 3-digit number using an empty number line, eg <math>823 - 56</math> as <math>823 - 50 = 773</math>, <math>773 - 6 = 767</math></li></ul>
	2	Adding and subtracting a 2-digit and 3-digit number mentally using place value understanding (jump strategy)	<ul style="list-style-type: none"><li>mentally solve addition and subtraction problems involving 2-digit and 3-digit numbers using place value partitioning, eg <math>823 - 56</math> as <math>823 - 50 = 773</math>, <math>773 - 6 = 767</math></li></ul>

Learning Journey	Steps	Content	Details
	3	Adding or subtracting up to 3-digit numbers mentally using place value understanding (jump strategy)	<ul style="list-style-type: none"> <li>• solve the addition or subtraction of two 3-digit numbers using a jump strategy, eg <math>823 - 356</math> as <math>823 - 300 = 523</math>, <math>523 - 50 = 473</math>, <math>473 - 6 = 467</math></li> </ul>
Add/subtract up to 3-digit numbers- split strategy	1	Adding and subtracting 2-digit and 3-digit numbers using place value models (split strategy)	<ul style="list-style-type: none"> <li>• model the addition or subtraction of a 2-digit and 3-digit number using a split strategy; place value equipment, money or diagrams</li> </ul>
			<ul style="list-style-type: none"> <li>• solve addition and subtraction problems using a split strategy, eg <math>265 - 21</math> as <math>260 - 20</math> and <math>5 - 1</math>, <math>240 + 4 = 244</math></li> </ul>
			<ul style="list-style-type: none"> <li>• record and explain the strategy using numerals, models and/or diagrams</li> </ul>
			<ul style="list-style-type: none"> <li>• check calculations using the inverse operation</li> </ul>
	2	Adding and subtracting two 3-digit numbers mentally using place value understanding (split strategy)	<ul style="list-style-type: none"> <li>• solve addition and subtraction problems using a split strategy, eg <math>265 + 327</math> as <math>200 + 300</math>, <math>60 + 20</math> and <math>5 + 7</math>, <math>500 + 80 + 12 = 592</math></li> </ul>
			<ul style="list-style-type: none"> <li>• record and explain the strategy using numerals, models and/or diagrams</li> </ul>
			<ul style="list-style-type: none"> <li>• check calculations using the inverse operation</li> </ul>
Add/subtract up to 3-digit numbers - bridging to 10	1	Adding and subtracting 2 numbers up to 3-digits using bridging to ten	<ul style="list-style-type: none"> <li>• add or subtract two numbers (up to 3-digits) where the first number has a 7, 8, or 9 in the ones columns, by first adding to the nearest ten and then adding the rest, eg <math>368 + 25</math> as <math>368 + 2 + 23</math>, or <math>362 - 25</math> as <math>362 - 2 - 23</math></li> </ul>
			<ul style="list-style-type: none"> <li>• record and explain the strategy using numerals, models and/or diagrams</li> </ul>
Add and subtract - rounding and compensating	1	Introducing addition and subtraction using rounding and compensating with two 2-digit numbers	<ul style="list-style-type: none"> <li>• add or subtract two 2-digit numbers where 1 number is close to a ten (digit in the ones column is 7, 8 or 9)</li> </ul>
			<ul style="list-style-type: none"> <li>• round 1 number to the next 10, carry out the addition or subtraction and adjust the answer to compensate for the original rounding, eg <math>33 + 19</math> as <math>33 + 20 - 1</math> or <math>81 + 35</math> as <math>80 + 35 + 1</math></li> </ul>
			<ul style="list-style-type: none"> <li>• check calculations using the inverse operation</li> </ul>
	2	Introducing addition using rounding and compensating when the change or start is unknown	<ul style="list-style-type: none"> <li>• model with number lines and solve addition problems with two 2-digit numbers where the digits in the ones column for the known addend and result are close together, eg <math>23 + ? = 81</math> becomes <math>23 + 60 - 2</math></li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>explain and justify the use of the strategy</li> </ul>
	3	Adding and subtracting up to two 3-digit numbers using rounding and compensating	<ul style="list-style-type: none"> <li>add or subtract up to two 3-digit numbers where 1 number is close to a hundred (ends in 97, 98 or 99)</li> <li>round 1 number to the next 100, carry out the addition or subtraction and adjust the answer to compensate for the original rounding, eg <math>398 + 23</math> as <math>400 + 23 - 2</math></li> </ul>
Add/subtract - non-standard partitioning	1	Adding two 3-digit numbers using non-standard partitioning	<ul style="list-style-type: none"> <li>partition the second number using non-standard partitioning to add two 3-digit numbers, eg <math>1546 + 625</math> as <math>546 + 500 + 100 + 20 + 5</math></li> <li>record and explain the strategy using numerals, models and/or diagrams</li> </ul>
	2	Subtracting two 3-digit numbers using non-standard partitioning	<ul style="list-style-type: none"> <li>partition the second number using non-standard partitioning to subtract two 3-digit numbers, eg <math>1546 - 625</math> as <math>1546 - 500 - 100 - 20 - 5</math></li> <li>record and explain the strategy using numerals, models and/or diagrams</li> </ul>
Adding and subtracting within 10 000			
Add and subtract - standard partitioning	1	Adding and subtracting multi-digit numbers using place value partitioning	<ul style="list-style-type: none"> <li>partition the second number to add two multi-digit numbers (up to 4 digits), eg <math>1546 + 625</math> as <math>546 + 600 + 20 + 5</math>; use standard or non-standard partitioning</li> <li>partition the second number to subtract two multi-digit numbers (up to 4 digits), eg <math>1546 - 625</math> as <math>546 - 600 - 20 - 5</math>; use standard or non-standard partitioning</li> </ul>
Adding and subtracting with multiples			
Adding and subtracting multiples of 10	1	Adding a multiple of 10 to a 3-digit number not crossing the 100	<ul style="list-style-type: none"> <li>add a multiple of 10 to a 3-digit number not crossing the 100, using models and tables, eg <math>239 + 40 = ?</math></li> </ul>
	2	Subtracting a multiple of 10 from a 3-digit number not crossing the 100	<ul style="list-style-type: none"> <li>subtract a multiple of 10 from a 3-digit number not crossing the 100, using models and tables, eg <math>775 - 50 = ?</math></li> </ul>
	3	Adding and subtracting multiples of 10 from 3-digit numbers, not crossing the 100	<ul style="list-style-type: none"> <li>add and subtract a multiple of 10 from a 3-digit number not crossing the 100, using models and tables</li> </ul>
Adding and subtracting multiples of 100	1	Adding and subtracting multiples of 100 from a 3-digit number using models	<ul style="list-style-type: none"> <li>add multiples of 100 to any 3-digit number using models to solve missing numbers, eg <math>675 = 475 + 200</math>, eg bar models, place value grid, Base ten</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• subtract multiples of 100 from any 3-digit number using models to solve missing numbers eg <math>675 - 200</math>, eg bar models, place value grid, Base ten</li> <li>• add and subtract multiples of 100 from any 3-digit number using models eg, bar models, place value grid, Base ten</li> </ul>
Adding multiples of 100 up to 5 digits	1	Adding multiples of 100 up to 5 digits	<ul style="list-style-type: none"> <li>• add multiples of 100 up to 5 digits</li> <li>• solve addition problems using multiples of 100 up to 5 digits</li> </ul>
Subtracting multiples of 100 up to 5 digits	1	Subtracting multiples of 100 up to 5 digits	<ul style="list-style-type: none"> <li>• subtract multiples of 100 up to 5 digits</li> <li>• solve subtraction problems using multiples of 100 up to 5 digits</li> </ul>
Add and subtract multiples of 100 (to 5 digits)	1	Adding and subtracting multiples of 100 up to 5 digits	<ul style="list-style-type: none"> <li>• add or subtract numbers up to 5 digits which are multiples of 100</li> </ul>
Adding multiples of 10, 1000 and 10 000	1	Adding multiples of 100, 1000 and 10 000	<ul style="list-style-type: none"> <li>• model the addition of hundreds and/or thousands using place value equipment or play money; relate these additions to adding ones, eg <math>4 + 3 = 7</math> so 4 thousands + 3 thousands = 7 thousands or <math>4000 + 3000 = 7000</math></li> <li>• use known basic facts, eg <math>5 + 3</math> to add multiples of 100, 1000 or 10 000 using place value knowledge and pattern identification, eg <math>5 + 3 = 8</math>, so <math>500 + 300 = 800</math>, <math>5000 + 3000 = 8000</math> and <math>50\ 000 + 30\ 000 = 80\ 000</math></li> </ul>
Subtracting multiples of 10, 1000 and 10 000	1	Subtracting multiples of 100, 1000 and 10 000	<ul style="list-style-type: none"> <li>• model the subtraction of hundreds and/or thousands using place value equipment or play money; relate these additions to subtracting ones, eg <math>8 - 3 = 5</math> so 8 thousands – 3 thousands = 5 thousands or <math>8000 - 3000 = 5000</math></li> <li>• use known basic facts, eg <math>9 - 5</math> to subtract multiples of 100, 1000 or 10 000 using place value knowledge and pattern identification, eg <math>9 - 5 = 4</math>, so <math>900 - 500 = 400</math>, <math>9000 - 5000 = 4000</math> and <math>90\ 000 - 50\ 000 = 40\ 000</math></li> </ul>
<b>Efficient strategies to add and subtract</b>			
Efficient strategies to add and subtract	1	Choosing efficient addition strategies when adding 2-digit and 3-digit numbers	<ul style="list-style-type: none"> <li>• 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</li> </ul>

Learning Journey	Steps	Content	Details	
			<ul style="list-style-type: none"><li>record and explain the strategy using numerals, models and/or diagrams</li></ul>	
			<ul style="list-style-type: none"><li>check the solution using a different strategy; compare with own and others' strategies, discuss and compare the efficiency of strategies</li></ul>	
	2	Choosing efficient subtraction strategies when subtracting 2-digit and 3-digit numbers	<ul style="list-style-type: none"><li>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</li></ul>	
			<ul style="list-style-type: none"><li>record and explain the strategy using numerals, models and/or diagrams</li></ul>	
			<ul style="list-style-type: none"><li>check the solution using a different strategy; compare with own and others' strategies, discuss and compare the efficiency of strategies</li></ul>	
	3	Choosing efficient addition and subtraction strategies when adding or subtracting 2-digit and 3-digit numbers	<ul style="list-style-type: none"><li>solve 2-digit and 3-digit addition and subtraction problems using efficient and effective strategies depending on the numbers in the problem, eg use rounding and compensating, jump strategies, split strategies, place value strategies or bridging strategies</li></ul>	
			<ul style="list-style-type: none"><li>record and explain the strategy using numerals, models and/or diagrams</li></ul>	
			<ul style="list-style-type: none"><li>check the solution using a different strategy; compare with own and others' strategies, discuss and compare the efficiency of strategies</li></ul>	
	Problem solving - addition & subtraction			
	Problem solving with addition and subtraction	1	Creating and solving addition and subtraction word problems (within 1000)	<ul style="list-style-type: none"><li>represent a word problem as an addition or subtraction number sentence</li></ul>
<ul style="list-style-type: none"><li>solve simple addition and subtraction word problems in context including find the difference, find the sum, change unknown, start unknown</li></ul>				
<ul style="list-style-type: none"><li>explain and compare strategies used to solve addition and subtraction word problems</li></ul>				
<ul style="list-style-type: none"><li>create problems in contexts that involve addition and subtraction</li></ul>				
2		Recognising equivalent number sentences with 1-digit and 2-digit numbers	<ul style="list-style-type: none"><li>complete number sentences involving addition and subtraction by calculating missing numbers using a variety of tools and strategies</li></ul>	
			<ul style="list-style-type: none"><li>use inverse operations to complete number sentences</li></ul>	

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>justify solutions when completing number sentences</li> </ul>
Inverse relationship (add/subtract)	1	Recognising and using the inverse relationship between addition and subtraction	<ul style="list-style-type: none"> <li>determine, through investigation, the inverse relationship between addition and subtraction</li> <li>determine the missing number in addition and subtraction equations using a variety of tools and strategies, such as the inverse relationship between addition and subtraction (up to 2 digit with 2-digit addition or subtraction)</li> </ul>
Solving 2-step word problems	1	Solving simple two-step word problems with addition and subtraction (max sum of 100)	<ul style="list-style-type: none"> <li>read and represent a two-step word problem using a letter for the unknown quantity</li> <li>solve the problem using a variety of tools, models and strategies</li> </ul>
<b>Estimating addition and subtraction</b>			
Estimating additions and subtractions	1	Estimating additions using rounding with 3-digit numbers	<ul style="list-style-type: none"> <li>round numbers to the nearest multiple of 100 to estimate additions, eg <math>546 + 789</math> as <math>500 + 800</math></li> <li>round numbers to the nearest multiple of 10 or 100 to estimate additions, eg <math>546 + 789</math> as <math>540 + 800</math></li> <li>explain the reason for the estimation used and whether the estimation is higher or lower than the actual answer</li> </ul>
	2	Estimating subtractions using rounding with 3-digit numbers	<ul style="list-style-type: none"> <li>round numbers to the nearest multiple of 100 to estimate subtractions, eg <math>546 - 189</math> as <math>500 - 200</math></li> <li>round numbers to the nearest multiple of 10 or 100 to estimate subtractions, eg <math>746 - 389</math> as <math>740 - 400</math></li> <li>explain the reason for the estimation used and whether the estimation is higher or lower than the actual answer</li> </ul>

Multiplication and Division			
Skip counting by 3 and 4			
Learning Journey	Steps	Content	Details
Skip counting by 3 to 30	1	Counting by skip counting forwards by 3s from zero up to 30	<ul style="list-style-type: none"> <li>use concrete materials, models, drawings, number lines/charts to skip count by 3s from zero</li> <li>use rhythmic counting to count in 3s from zero</li> <li>recognise an error in the skip counting sequence</li> </ul>
	2	Counting by skip counting backwards by 3s from 30	<ul style="list-style-type: none"> <li>use concrete materials, models, drawings, number lines/charts to skip count backwards by 3s from 30</li> <li>use rhythmic counting to count backwards in 3s from 30</li> </ul>



Learning Journey	Steps	Content	Details
	3	Counting by skip counting forwards or backwards by 3s from zero up to 30	● recognise an error in the skip counting sequence
			● use concrete materials, models, drawings, number lines/charts to skip count by 3s
			● use rhythmic counting to count in 3s
			● recognise an error in the skip counting sequence
Skip counting by 3 to 30 from any multiple	1	Counting by skip counting forwards by 3s from any multiple of 3 up to 30	● use concrete materials, models, drawings, number lines/charts to skip count by 3s from any multiple of 3
			● use knowledge of the number sequence to count in 3s from any multiple of 3
			● recognise an error in the skip counting sequence
	2	Counting by skip counting backwards by 3s from any multiple of 3 from 30	● use concrete materials, models, drawings, number lines/charts to skip count backwards by 3s from 30
			● use knowledge of the number sequence to count backwards in 3s from any multiple of 3
			● recognise an error in the skip counting sequence
	3	Counting by skip counting forwards or backwards by 3s from any multiple of 3 from zero to 30	● use concrete materials, models, drawings, number lines/charts to skip count by 3s
			● use knowledge of the number sequence to count forwards or backwards in 3s from any multiple of 3
			● recognise an error in the skip counting sequence
Skip counting by 4 to 40	1	Counting by skip counting forwards by 4s from zero up to 40	● use concrete materials, models, drawings, number lines/charts to skip count by 4s from zero
			● use rhythmic counting to count in 4s from zero
			● recognise an error in the skip counting sequence
Multiplication facts for 2 (up to 10x)			
Recalling multiplication facts for 2	1	Recalling multiplication facts for 2	● recall the 2 multiplication facts
Using multiplication facts for 2	1	Using multiplication facts for 2	● solve and create multiplication problems in context (using multiplication facts for 2), including word problems
Multiplication facts for 3 (up to 10x)			
Exploring multiplication by 3	1	Exploring multiplication by 3	● relate multiplication by 3 to doubles and 1 more group; model and describe, eg '3 groups of 4 is the same as double 4 and one more group of 4'
			● explore patterns of the multiplication facts for 3 on a number chart

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>model the 2 related multiplication facts, eg <math>3 \times 4</math> and <math>4 \times 3</math></li> </ul>
Recalling multiplication facts for 3	1	Recalling multiplication facts for 3	<ul style="list-style-type: none"> <li>recall the multiplication facts for 3</li> </ul>
Using multiplication facts for 3	1	Using multiplication facts for 3	<ul style="list-style-type: none"> <li>solve and create multiplication problems in context (using multiplication facts for 3), including word problems</li> </ul>
<b>Multiplication facts for 4 (up to 10x)</b>			
Recalling multiplication facts for 4	1	Recalling multiplication facts for 4	<ul style="list-style-type: none"> <li>recall the multiplication facts for 4</li> </ul>
<b>Multiplication facts for 5 (up to 10x)</b>			
Recalling multiplication facts for 5	1	Recalling multiplication facts for 5	<ul style="list-style-type: none"> <li>recall the 5 multiplication facts</li> </ul>
Using multiplication facts for 5	1	Using multiplication facts for 5	<ul style="list-style-type: none"> <li>solve and create multiplication problems in context (using multiplication facts for 5), including word problems</li> </ul>
<b>Multiplication facts for 10 (up to 10x)</b>			
Using multiplication facts for 10	1	Using multiplication facts for 10	<ul style="list-style-type: none"> <li>solve and create multiplication problems in context (using multiplication facts for 10), including word problems</li> </ul>
Multiplying by 2s, 5s and 10s	1	Multiplying by 2s, 5s and 10s	<ul style="list-style-type: none"> <li>recall the multiplication facts for 2s, 5s and 10s</li> <li>solve multiplication problems with 2, 5 or 10, including word problems; use the multiplication symbol</li> </ul>
Recalling the multiplication facts for 10	1	Recalling the multiplication facts for 10	<ul style="list-style-type: none"> <li>recall the 10 multiplication facts</li> </ul>
<b>Recalling multiplication facts to <math>5 \times 5</math></b>			
Recalling multiplication facts to $5 \times 5$	1	Recalling multiplication facts to $5 \times 5$	<ul style="list-style-type: none"> <li>recall multiplication facts to <math>5 \times 5</math></li> </ul>
<b>Multiplication facts for 3 (up to 12x)</b>			
Using multiplication facts for 3 (up to 12x)	1	Using multiplication facts for 3 (up to 12x)	<ul style="list-style-type: none"> <li>solve and create multiplication problems in context (using multiplication facts for 3), including word problems and models</li> </ul>
Recalling multiplication facts for 3 (up to 12x)	1	Recalling multiplication facts for 3 (up to 12x)	<ul style="list-style-type: none"> <li>recall the multiplication facts for 3</li> </ul>
<b>Multiplication facts <math>\times 4</math> (up to <math>\times 12</math>)</b>			
Multiply by 4 ( $\times 12$ )	1	Exploring multiplication by 4 up to 48	<ul style="list-style-type: none"> <li>relate multiplication by 4 to double multiplication by 2</li> <li>explore patterns of the multiplication facts for 4 on a number chart</li> <li>model the 2 related multiplication facts, eg <math>3 \times 4</math> and <math>4 \times 3</math></li> </ul>
Recalling multiplication facts for 4 (up to 12x)	1	Recalling multiplication facts for 4 (up to 12x)	<ul style="list-style-type: none"> <li>recall the multiplication facts for 4</li> </ul>
Using multiplication facts $\times 4$ (up to $\times 12$ )	1	Using multiplication facts for 4	<ul style="list-style-type: none"> <li>solve and create multiplication problems in context (using multiplication facts for 4), including word problems</li> </ul>

Learning Journey	Steps	Content	Details
<b>Dividing by 2</b>			
Using division facts for 2	1	Using division facts for 2	<ul style="list-style-type: none"> <li>• solve and create division problems in context (using multiplication facts for 2), including word problems</li> </ul>
<b>Dividing by 5</b>			
Using division facts for 5	1	Using division facts for 5	<ul style="list-style-type: none"> <li>• solve and create division problems in context (using multiplication facts for 5), including word problems</li> </ul>
<b>Dividing by 10</b>			
Using division facts for 10	1	Using division facts for 10	<ul style="list-style-type: none"> <li>• solve and create division problems in context (using multiplication facts for 10), including word problems</li> </ul>
<b>Dividing by 2, 5, 10</b>			
Divide by 2, 5 and 10	1	Dividing by 2s, 5s and 10s	<ul style="list-style-type: none"> <li>• recall the division facts for 2s, 5s and 10s</li> <li>• solve division problems with 2, 5 or 10, including word problems; use the division symbol</li> </ul>
	2	Dividing by 2, 5, 3 and 4 (1 - 10)	<ul style="list-style-type: none"> <li>• recall the division facts for 2s, 5s, 3s and 4s</li> <li>• solve division problems with 2, 5, 3 and 4, including word problems</li> </ul>
<b>Dividing by 3</b>			
Divide by 3	1	Dividing by 3	<ul style="list-style-type: none"> <li>• model and describe the related multiplication and division facts for 3 using models, drawings or manipulatives, eg <math>5 \times 3 = 15</math> and 15 divided by 3 = 5</li> <li>• relate division to how many (whole) times the divisor goes into the dividend</li> </ul>
Using division facts for 3	1	Using division facts for 3	<ul style="list-style-type: none"> <li>• solve and create division problems in context (using multiplication facts for 3), including word problems</li> </ul>
<b>Dividing by 3 up to 36</b>			
Using division facts for 3 up to by 36	1	Using division facts for 3 up to 36	<ul style="list-style-type: none"> <li>• solve and create division problems in context (using multiplication facts for 3), including word problems and models</li> </ul>
<b>Dividing by 4</b>			
Divide by 4	1	Dividing by 4	<ul style="list-style-type: none"> <li>• model and describe the related multiplication and division facts for 4 using models, drawings or manipulatives, eg <math>4 \times 3 = 12</math> and 12 divided by 3 = 4</li> <li>• relate division to how many (whole) times the divisor goes into the dividend</li> </ul>
Using division facts for 4	1	Using division facts for 4	<ul style="list-style-type: none"> <li>• solve and create division problems in context (using multiplication facts for 4), including word problems</li> </ul>

Learning Journey	Steps	Content	Details
<b>Dividing by 4 up to 48</b>			
Divide by 4 (up to 48)	1	Dividing by 4 up to 48	<ul style="list-style-type: none"> <li>• model and describe the related multiplication and division facts for 4 using models, drawings or manipulatives, eg <math>4 \times 3 = 12</math> and 12 divided by <math>3 = 4</math></li> <li>• relate division to how many (whole) times the divisor goes into the dividend</li> </ul>
Using division facts for 4 up to by 48	1	Using division facts for 4 up to 48	<ul style="list-style-type: none"> <li>• solve and create division problems in context (using multiplication facts for 4), including word problems and models</li> </ul>
<b>Recalling division facts for 2</b>			
Recalling division facts for 2	1	Recalling the division facts for 2	<ul style="list-style-type: none"> <li>• recall the division facts for 2</li> </ul>
<b>Recalling division facts for 5</b>			
Recalling division facts for 5	1	Recalling the division facts for 5	<ul style="list-style-type: none"> <li>• recall the division facts for 5</li> </ul>
<b>Recalling division facts for 10</b>			
Recalling division facts for 10	1	Recalling the division facts for 10	<ul style="list-style-type: none"> <li>• recall the division facts for 10</li> </ul>
<b>Recalling division facts for 3</b>			
Recalling division facts for 3	1	Recalling the division facts for 3 up to 30	<ul style="list-style-type: none"> <li>• recall the division facts for 3</li> </ul>
<b>Recalling division facts for 4 up to 40</b>			
Recalling division facts	1	Recalling division facts for 4	<ul style="list-style-type: none"> <li>• recall the division facts for 4</li> </ul>
<b>Recalling division facts for 4 up to 48</b>			
Recalling division facts for 4 up to 48	1	Recalling division facts for 4 up to 48	<ul style="list-style-type: none"> <li>• recall the division facts for 4 using models</li> </ul>
<b>Multiplying and dividing by 2</b>			
Multiplying and dividing by 2	1	Multiplying and dividing by 2	<ul style="list-style-type: none"> <li>• recall the multiplication and division facts for 2</li> <li>• solve and create multiplication and division problems in context (using multiplication facts for 2), including word problems</li> </ul>
<b>Multiplying and dividing by 5</b>			
Multiplying and dividing by 5	1	Multiplying and dividing by 5	<ul style="list-style-type: none"> <li>• recall the multiplication and division facts for 5</li> <li>• solve and create multiplication and division problems in context (using multiplication facts for 5), including word problems</li> </ul>
<b>Multiplying and dividing by 10</b>			
Multiplying and dividing by 10	1	Multiplying and dividing by 10	<ul style="list-style-type: none"> <li>• recall the multiplication and division facts for 10</li> <li>• solve and create multiplication and division problems in context (using multiplication facts for 10), including word problems</li> </ul>

Learning Journey	Steps	Content	Details
<b>Multiplying and dividing by 2s, 5s &amp; 10s</b>			
Multiplying and dividing by 2s, 5s and 10s	1	Multiplying and dividing by 2s, 5s and 10s	<ul style="list-style-type: none"> <li>recall the multiplication facts and related division facts for 2s, 5s and 10s</li> <li>solve multiplication and division problems with 2, 5 or 10, including word problems; use the multiplication symbol</li> </ul>
<b>Multiplying and dividing by 3 (up to 36)</b>			
Multiplying and dividing by 3 (up to 36)	1	Multiplying and dividing by 3	<ul style="list-style-type: none"> <li>recall the multiplication facts and related division facts for 3</li> <li>solve multiplication and division problems with 3, including word problems</li> </ul>
<b>Multiplying and dividing by 4</b>			
Multiplying and dividing by 4	1	Multiplying and dividing by 4	<ul style="list-style-type: none"> <li>recall the multiplication facts and related division facts for 4</li> <li>solve multiplication and division problems with 4, including word problems</li> </ul>
<b>Multiplying and dividing by 4 (up to 48)</b>			
Multiplying and dividing by 4 (up to 48)	1	Multiplying and dividing by 4 up to 48	<ul style="list-style-type: none"> <li>recall the multiplication facts and related division facts for 4</li> <li>solve multiplication and division problems with 4, including word problems</li> </ul>
<b>Multiply and divide facts within x10</b>			
Multiplication and division facts (2, 5, 3, 4)	1	Multiplying by 2, 5, 3 and 4 (1 - 10)	<ul style="list-style-type: none"> <li>recall the multiplication facts for 2s, 5s, 3s and 4s</li> <li>solve multiplication problems with 2, 5, 3 and 4, including word problems</li> </ul>
	2	Multiplying and dividing by 2, 5, 3 and 4 (1 - 10)	<ul style="list-style-type: none"> <li>recall the multiplication and division facts for 2s, 5s, 3s and 4s</li> <li>solve multiplication and division problems with 2, 5, 3 and 4, including word problems</li> </ul>
<b>Using multiples</b>			
Multiplying by a multiple of 10	1	Using place value to multiply (x 10)	<ul style="list-style-type: none"> <li>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</li> <li>relate to known facts and place value understanding, eg <math>4 \times 3 = 12</math> so <math>4 \times 3 \text{ tens} = 12 \text{ tens or } 120</math></li> </ul>
	2	Multiplying by a multiple of 10	<ul style="list-style-type: none"> <li>relate to known facts and place value understanding, eg <math>4 \times 3 = 12</math> so <math>4 \times 3 \text{ tens} = 12 \text{ tens or } 120</math></li> <li>use skip counting to solve, eg <math>4 \times 30</math> as <math>30 + 30 + 30 + 30</math></li> <li>multiply by factorising the multiple and represent with drawings or models, eg <math>4 \times 30</math> as <math>4 \times 3 \times 10</math></li> </ul>

Learning Journey	Steps	Content	Details
Multiply by a multiple of 100	1	Using place value to multiply ( $\times 100$ )	<ul style="list-style-type: none"> <li>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</li> </ul>
			<ul style="list-style-type: none"> <li>relate to known facts and place value understanding, eg <math>4 \times 3 = 12</math> so <math>4 \times 3</math> hundreds = 12 hundreds or 1200</li> </ul>
	2	Multiplying by a multiple of 100	<ul style="list-style-type: none"> <li>relate to known facts and place value understanding, eg <math>4 \times 3 = 12</math> so <math>4 \times 3</math> hundreds = 12 hundreds or 1200</li> </ul>
			<ul style="list-style-type: none"> <li>use skip counting to solve, eg <math>4 \times 300</math> as <math>300 + 300 + 300 + 300</math></li> <li>multiply by factorising the multiple and represent with drawings or models, eg <math>4 \times 30</math> as <math>4 \times 3 \times 10</math></li> </ul>
Divide by multiples of 10 and 100	1	Dividing a multiple of 10 by 10 where answer is a whole number	<ul style="list-style-type: none"> <li>relate to known facts and place value understanding, eg <math>40 \div 10 = 4</math> so <math>400 \div 10 = 40</math></li> </ul>
	2	Dividing a multiple of 100 by 100 where answer is a whole number	<ul style="list-style-type: none"> <li>relate to known facts and place value understanding, eg 42 divided by 1 = 42 and 420 divided by 10 = 42, so 4,200 divided by 100 = 42</li> </ul>
<b>Problem solving</b>			
Understand division as an unknown-factor problem	1	Understanding division as an unknown-factor problem	<ul style="list-style-type: none"> <li>understand division as an unknown-factor problem</li> </ul>
Connecting multiplication and division facts	1	Relating multiplication and division facts through fact families	<ul style="list-style-type: none"> <li>model and describe the fact families for 2, 3, 4, 5 and 10 multiplication facts, eg <math>3 \times 4 = 12</math>, <math>4 \times 3 = 12</math>, 12 divided by 3 = 4 and 12 divided by 4 equals 3</li> </ul>
			<ul style="list-style-type: none"> <li>explain why a rectangular array can be read as a division in 2 ways by forming vertical or horizontal groups, eg <math>12 \div 3 = 4</math> or <math>12 \div 4 = 3</math></li> </ul>
Finding missing numbers in equations	1	Finding the missing number to make a multiplication number sentence true (2, 5, 10 facts)	<ul style="list-style-type: none"> <li>complete number sentences involving 1 operation of multiplication by finding the missing number using a variety of tools, equipment and strategies, eg <math>3 \times ? = 30</math> or <math>? \times 2 = 18</math> or <math>5 \times 3 = ?</math></li> </ul>
	2	Finding the missing number to make a division number sentence true (2, 5, 10 facts)	<ul style="list-style-type: none"> <li>complete number sentences involving 1 operation of division by finding the missing number using a variety of tools, equipment and strategies eg <math>40 \div 10 = ?</math>, or <math>35 \div ? = 7</math> or <math>? \div 2 = 9</math></li> </ul>
	3	Finding the unknown whole number (in any position) in a multiplication or division equation	<ul style="list-style-type: none"> <li>find the unknown whole number (in any position) in a multiplication or division equation</li> </ul>

Learning Journey	Steps	Content	Details
Solving 2-step equations	1	Solving two-step word problems with the four operations (2, 5, 10 multiplication facts)	<ul style="list-style-type: none"> <li>• use the four operations to solve two-step word problems</li> <li>• represent an unknown quantity with a letter</li> <li>• solve the problem using a variety of tools, models and strategies</li> </ul>
Multiplication problems: fair share/equal grouping	1	Solving multiplication problems using fair shares or equal grouping (within 100)	<ul style="list-style-type: none"> <li>• solve fair share multiplication or division problems (with unknown in any position), eg '20 flowers are to be placed in 4 bunches, how many flowers will be in each bunch?'</li> <li>• solve equal grouping multiplication or division problems (with unknown in any position), eg 'There are 9 tables in a cafeteria. Each table has 5 chairs. What is the total number of chairs in the cafeteria?'</li> <li>• write equations using a symbol, eg a box or a blank, to represent the unknown number</li> <li>• compare their own and others' methods of solution</li> </ul>
Solving word problems with arrays	1	Solving multiplication and division problems involving arrays (within 100)	<ul style="list-style-type: none"> <li>• 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?'</li> <li>• write equations using a symbol, eg a box or a blank, to represent the unknown number</li> <li>• compare their own and others' methods of solution</li> </ul>
Solving comparison word problems	1	Solving multiplication and division problems involving comparisons (within 100)	<ul style="list-style-type: none"> <li>• solve multiplication and division problems involving comparisons eg 'Anna has 3 times as much money as David. David has \$6. How much money does Anna have?'</li> <li>• write equations using a symbol, eg a box or a blank, to represent the unknown number</li> <li>• compare their own and others' methods of solution</li> </ul>
Scaling problems	1	Using multiplication and division to solve measurement and scaling problems (within 100)	<ul style="list-style-type: none"> <li>• solve scaling problems using multiplication and division strategies, eg 'This square has sides of 5 cm. Draw a square with sides that are 3 times as long'</li> <li>• compare their own and others' methods of solution</li> </ul>

Money			
Money and purchases (AUS)			
Learning Journey	Steps	Content	Details
Money (\$)	1	Using money to make purchases	• calculate the total cost of purchasing two items given their values and record the value in dollars and cents separately (no decimal point)
			• determine the exact notes and coins needed to purchase two items given their values
	2	Calculating change when making purchases	• determine one or more notes and coins that have enough value to make a purchase of one or more items
			• calculate the change required when making purchases using cash and record values in dollars and cents separately (no decimal point)
Money and purchases (UK)			
Money (£)	1	Using money to make purchases   United Kingdom	• calculate the total cost of purchasing 2 items given their values and record the value in pounds and pence separately (no decimal point)
			• determine the exact notes and coins needed to purchase 2 items given their values
	2	Solving simple word problems involving money (pounds and pence)   United Kingdom	• solve word problems using coins, eg would you rather have five 50p coins or twelve 20p coins?

Fractions			
Fractions - basic facts			
Learning Journey	Steps	Content	Details
Numerator and denominator	1	Introducing the terms numerator and denominator	● read and write symbols to represent fractions
			● use the terms denominator and numerator to describe a fraction
Introducing and counting in fractions			
Introducing eighths	1	Introducing eighths of objects or shapes	● find eighths of objects and shapes
			● recognise equivalence with halves and quarters
			● use the language of 'one eighth', 'two eighths' and so forth along with standard fractional notation
Introducing thirds	1	Introducing thirds	● find thirds of objects, shapes and lengths
			● find thirds of sets
			● estimate the size of a fractional part before using eg paper folding to check or estimate the size of the whole from the part
			● find the whole from a part
			● use language 'one third', 'two thirds', 'three thirds'



Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"><li>• use symbols to represent: <math>\frac{1}{3}</math>, <math>\frac{2}{3}</math>, <math>\frac{3}{3}</math></li></ul>
Counting in thirds	1	Counting in thirds on a number line up to 1	<ul style="list-style-type: none"><li>• represent fractions on a number line (in simple cases, eg identify <math>\frac{2}{3}</math> on a number line that already shows divisions in thirds)</li></ul>
	2	Counting in thirds on a number line up to 3	<ul style="list-style-type: none"><li>• count in proper and improper fractions on a number line</li><li>• identify whole number equivalence <math>\frac{3}{3} = 1</math>, <math>\frac{6}{3} = 2</math></li></ul>
Introducing sixths	1	Introducing sixths	<ul style="list-style-type: none"><li>• find sixths of objects and shapes</li></ul>
			<ul style="list-style-type: none"><li>• find sixths of sets</li></ul>
			<ul style="list-style-type: none"><li>• estimate the size of a fractional part before using, eg paper folding to check or estimate the size of the whole from the part</li></ul>
			<ul style="list-style-type: none"><li>• find the whole from a part</li></ul>
			<ul style="list-style-type: none"><li>• use language 'one sixth', 'two sixths', 'three sixths'</li></ul>
			<ul style="list-style-type: none"><li>• use symbols to represent: <math>\frac{1}{6}</math>, <math>\frac{2}{6}</math>, <math>\frac{3}{6}</math></li></ul>
Introducing fifths	1	Introducing fifths	<ul style="list-style-type: none"><li>• understand the relationship between thirds and sixths</li></ul>
			<ul style="list-style-type: none"><li>• estimate the size of a fractional part before using, eg paper folding to check or estimate the size of the whole from the part</li></ul>
			<ul style="list-style-type: none"><li>• find fifths of objects, shapes and lengths</li></ul>
			<ul style="list-style-type: none"><li>• find fifths of sets</li></ul>
			<ul style="list-style-type: none"><li>• find the whole from a part</li></ul>
			<ul style="list-style-type: none"><li>• use language 'one fifth', 'two fifths', 'three fifths' and so on</li></ul>
Introducing and counting in tenths	1	Introducing tenths	<ul style="list-style-type: none"><li>• use symbols to represent fractions <math>\frac{1}{5}</math>, <math>\frac{2}{5}</math> ...</li></ul>
			<ul style="list-style-type: none"><li>• recognise that tenths come from 10 equal parts</li></ul>
			<ul style="list-style-type: none"><li>• find tenths of objects, sets and shapes</li></ul>
			<ul style="list-style-type: none"><li>• find the whole from the part</li></ul>
			<ul style="list-style-type: none"><li>• use language 'one tenth', 'two tenths' etc</li></ul>
			<ul style="list-style-type: none"><li>• use symbols to represent fractions <math>\frac{1}{10}</math>, <math>\frac{2}{10}</math> etc</li></ul>
Finding fractions of shapes			
Fractions of objects or shapes	1	Finding halves, quarters and eighths of objects or shapes	<ul style="list-style-type: none"><li>• recognise equivalence</li></ul>
			<ul style="list-style-type: none"><li>• estimate the size of a fractional part before using, eg paper folding to check or estimate the size of the whole from the part</li></ul>
			<ul style="list-style-type: none"><li>• find the whole from a part</li></ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• find halves, quarters and eighths of uneven partitioned shapes</li> </ul>
			<ul style="list-style-type: none"> <li>• use symbols for halves, quarters and eighths</li> </ul>
			<ul style="list-style-type: none"> <li>• recognise larger denominator = smaller parts</li> </ul>
	2	Finding halves, thirds or quarters of shapes using partitioning	<ul style="list-style-type: none"> <li>• recognise that equal shares are not always the same shape</li> </ul>
	3	Finding thirds and sixths of objects, shapes and sets	<ul style="list-style-type: none"> <li>• recognise equivalence</li> </ul>
			<ul style="list-style-type: none"> <li>• find thirds and sixths of objects, shapes and lengths</li> </ul>
			<ul style="list-style-type: none"> <li>• find thirds and sixths of sets (using models)</li> </ul>
			<ul style="list-style-type: none"> <li>• find the whole from a part</li> </ul>
			<ul style="list-style-type: none"> <li>• find thirds and sixths of uneven partitioned shapes</li> </ul>
			<ul style="list-style-type: none"> <li>• use language 'one third', 'two thirds', 'three thirds'</li> </ul>
			<ul style="list-style-type: none"> <li>• use fractional notation</li> </ul>
Identifying simple fractions	1	Identifying and representing simple fractions of an object or shape (denominators 1-12)	<ul style="list-style-type: none"> <li>• find any fraction, eg 5 squares shaded out of 12 is <math>\frac{5}{12}</math></li> </ul>
			<ul style="list-style-type: none"> <li>• recognise larger denominator = smaller parts</li> </ul>
			<ul style="list-style-type: none"> <li>• recognise that objects and shapes can be partitioned in various ways eg recognise that shading 5 squares out of 12 can be done in many ways</li> </ul>
			<ul style="list-style-type: none"> <li>• explore equivalences</li> </ul>
Matching representations of fractions	1	Matching fractions in different representations	<ul style="list-style-type: none"> <li>• match fractions using different representations, eg, written, model, fraction symbol, number line, multilink, Numicon</li> </ul>
Partition shapes into parts with equal areas	1	Partitioning shapes into parts with equal areas	<ul style="list-style-type: none"> <li>• partition shapes into parts with equal areas</li> </ul>
			<ul style="list-style-type: none"> <li>• express the area of each part as a unit fraction of the whole</li> </ul>
Express and identify whole numbers as fractions	1	Identifying simple fractions that are equivalent to 1 whole	<ul style="list-style-type: none"> <li>• use models to identify fractions that are equivalent to one whole</li> </ul>
			<ul style="list-style-type: none"> <li>• record equivalences eg <math>\frac{3}{3} = 1</math></li> </ul>
	2	Identifying fractions that are equivalent to 1 whole on a number line (denominators 2, 3, 4, 6, 8)	<ul style="list-style-type: none"> <li>• identify fractions that are equivalent to 1 whole on a number line (denominators 2, 3, 4, 6, 8)</li> </ul>
	3	Expressing whole numbers as fractions	<ul style="list-style-type: none"> <li>• express whole numbers as fractions</li> </ul>
	4	Using models to find the whole given the unit fraction of a set (denominators 2, 3, 4, 5, 6, 8)	<ul style="list-style-type: none"> <li>• find the whole given the fraction of a set, eg Anne has 4 stickers. She has <math>\frac{1}{3}</math> of the sticker collection. How many stickers are there in the sticker collection?</li> </ul>
			<ul style="list-style-type: none"> <li>• use addition and subtraction strategies</li> </ul>

Learning Journey	Steps	Content	Details
<b>Fractions on a number line</b>			
Locating unit fractions on a number line	1	Locating unit fractions on a number line (denominators 2, 3, 4, 6, 8)	<ul style="list-style-type: none"> <li>locate unit fractions on a number line (denominators 2, 3, 4, 6, 8)</li> </ul>
	2	Locating fractions on a number line (denominators 2, 3, 4, 6, 8)	<ul style="list-style-type: none"> <li>locate fractions on a number line (denominators 2, 3, 4, 6, 8)</li> </ul>
Counting with fractions on a number line	1	Counting with halves and quarters and eighths on a number line up to 3	<ul style="list-style-type: none"> <li>count in proper and improper fractions on a number line</li> <li>identify equivalence to 1: <math>2/2 = 1</math>, <math>4/4 = 1</math>, <math>8/8 = 1</math></li> </ul>
	2	Counting and representing mixed numbers on a number line up to 3 (halves, quarters, eighths)	<ul style="list-style-type: none"> <li>count in mixed numbers on a number line</li> <li>locate and represent mixed numbers on a number line, including on a partially-completed number line</li> </ul>
	3	Counting and representing mixed numbers on a number line up to 3 (thirds)	<ul style="list-style-type: none"> <li>count in mixed numbers on a number line up to 3</li> <li>locate and represent mixed numbers on a number line, including on a partially-completed number line</li> </ul>
	4	Counting and representing fractions using a number line (any denominator)	<ul style="list-style-type: none"> <li>count and represent fractions using a number line (any denominator)</li> </ul>
<b>Comparing and ordering fractions</b>			
Compare and order fractions	1	Comparing and ordering improper fractions whose denominators are all multiples of the same number (greater than 1) using models	<ul style="list-style-type: none"> <li>order simple improper fractions whose denominators are all multiples of the same number using models, eg bar models</li> <li>compare simple proper fractions whose denominators are all multiples of the same number using models, eg bar model</li> </ul>
	2	Ordering and comparing simple proper fractions with different denominators using models as a scaffold (denominators 2, 3, 4, 5, 6, 7, 8)	<ul style="list-style-type: none"> <li>order fractions with different denominators, including on a number line marked with 0, <math>\frac{1}{2}</math>, 1; use models to support decisions</li> <li>compare fractions using models and <math>\frac{1}{2}</math> as a reference, eg <math>3/8</math> and <math>6/7</math>, '<math>3/8</math> is closer to one half and <math>6/7</math> is closer to one whole so <math>6/7</math> is larger'</li> </ul>
Order tenths up to 1	1	Ordering tenths (up to 1 whole)	<ul style="list-style-type: none"> <li>order tenths in symbols and words</li> </ul>
<b>Investigating equivalent fractions</b>			
Investigating equivalent fractions	1	Investigating simple equivalent fractions less than 1 using concrete materials and/or models (denominators 2, 3, 4, 5, 6, 8, 10)	<ul style="list-style-type: none"> <li>use models such as number lines, fraction strips, fraction walls to identify equivalent fractions</li> <li>use concrete materials or models to show equivalent fractions, eg folding a strip of paper</li> </ul>
	2	Investigating simple equivalent fractions less than 1 using concrete materials and/or models (denominators 2, 3, 4, 6, 8)	<ul style="list-style-type: none"> <li>use a number line to identify equivalent fractions</li> <li>use a fraction wall to identify equivalent fractions</li> </ul>

Learning Journey	Steps	Content	Details
	3	Finding simple equivalent proper fractions (denominators 2, 3, 4, 5, 6, 8, 10)	<ul style="list-style-type: none"> <li>recognise and show, using diagrams simple equivalent fractions with small denominators — eg <math>\frac{4}{8}</math> and <math>\frac{1}{2}</math></li> </ul>
	4	Finding simple equivalent proper fractions (denominators 2, 3, 4, 6, 8)	<ul style="list-style-type: none"> <li>recognise and generate simple equivalent fractions (denominators 2, 3, 4, 6, 8)</li> </ul>
			<ul style="list-style-type: none"> <li>explain why the fractions are equivalent by using a visual fraction model</li> </ul>
Working with fractions			
Fractions greater than 1	1	Introducing mixed numbers for fractions with denominators 2, 3, 4, 5, 6, 8	<ul style="list-style-type: none"> <li>use mixed numbers to describe models of fractions between 1 and 3; identify the wholes and fractional parts (no conversion from improper to proper fractions)</li> <li>identify and describe 'mixed numbers' as having a whole-number part and a fraction part</li> </ul>
Adding unit fractions			
Adding unit fractions (same denominator)	1	Adding unit fractions with the same denominators (2, 4, 8) to make fractions up to and including 1 whole (with models)	<ul style="list-style-type: none"> <li>add unit fractions with the same denominator (2, 4, 8) to make fractions up to and including 1 whole using models</li> <li>solve problems involving adding fractions with the same denominator (2, 4, 8)</li> </ul>
	2	Adding unit fractions with the same denominator (2, 4, 8) to make fractions up to and including 1 whole (without models)	<ul style="list-style-type: none"> <li>add unit fractions with the same denominator (2, 4, 8) to make fractions up to and including 1 whole without models</li> <li>solve unit fraction problems where the parts are unknown, eg <math>\frac{1}{4}</math> plus missing fraction equals 1 whole</li> </ul>
	3	Using models to add unit fractions with the same denominators (1-20) to make fractions up to and including 1 whole	<ul style="list-style-type: none"> <li>use models to add unit fractions with the same denominator to make fractions up to and including one whole, eg <math>\frac{1}{3} + \frac{1}{3} + \frac{1}{3}</math></li> </ul>
Adding proper fractions (same denominator)	1	Adding simple fractions with the same denominator using models to make fractions up to and including 1 whole	<ul style="list-style-type: none"> <li>use models to add 2 or more fractions with the same denominator (up to and including one whole)</li> <li>solve problems involving adding fractions with the same denominator</li> </ul>
	2	Adding proper fractions with the same denominator using models to make fractions up to 1 whole	<ul style="list-style-type: none"> <li>add 2 or more fractions with the same denominator up to one whole (with and without models)</li> </ul>
	3	Adding simple fractions with the same denominator using models (up to 3 wholes)	<ul style="list-style-type: none"> <li>use models to add 2 or more fractions with the same denominator</li> <li>solve problems involving adding fractions with the same denominator</li> <li>record answers greater than 1 as an improper fraction</li> </ul>

Learning Journey	Steps	Content	Details
<b>Subtracting unit fractions</b>			
Subtracting unit fractions (same denominator)	1	Subtracting unit fractions with the same denominator (2, 4, 8) including subtracting from 1 whole (with models)	<ul style="list-style-type: none"> <li>• subtract unit fractions with the same denominator (2, 4, 8) up to 1 whole with the use of models</li> <li>• solve problems involving subtracting unit fractions with the same denominator (2, 4, 8) from 1 whole</li> </ul>
	2	Subtracting unit fractions with the same denominator (2, 4, 8) including subtracting from 1 whole (without models)	<ul style="list-style-type: none"> <li>• subtract unit fractions with the same denominator (2, 4, 8) up to 1 whole without the use of models</li> <li>• solve unit fraction problems where the parts are unknown, eg 1 whole minus missing fraction equals <math>\frac{1}{4}</math></li> </ul>
Subtracting proper fractions (same denominator)	1	Subtracting simple fractions with the same denominator using models, including subtracting from 1 whole	<ul style="list-style-type: none"> <li>• use models to subtract 2 or more fractions with the same denominator (including subtracting from one whole)</li> <li>• solve problems involving adding fractions with the same denominator</li> </ul>
	2	Subtracting proper fractions with the same denominator using models to make fractions within 1 whole	<ul style="list-style-type: none"> <li>• subtract 2 or more fractions with the same denominator up to one whole (with and without models)</li> </ul>
	3	Subtracting simple fractions with the same denominator using models (up to 3 wholes)	<ul style="list-style-type: none"> <li>• use models to subtract 2 or more fractions with the same denominator</li> <li>• solve problems involving adding fractions with the same denominator</li> <li>• record answers greater than 1 as an improper fraction</li> </ul>
<b>Addition and subtraction with fractions</b>			
Add and subtract fractions (same denominator)	1	Adding and subtracting simple fractions with the same denominator using models to make fractions up to and including one whole	<ul style="list-style-type: none"> <li>• use models to add or subtract 2 or more fractions with the same denominator</li> <li>• solve problems involving adding or subtracting fractions with the same denominator</li> </ul>
	2	Adding and subtracting simple fractions with the same denominator using models (up to 3 wholes)	<ul style="list-style-type: none"> <li>• use models to add or subtract 2 or more fractions with the same denominator</li> <li>• solve problems involving adding or subtracting fractions with the same denominator</li> <li>• record answers greater than 1 as an improper fraction</li> </ul>
Estimation and addition strategies	1	Using estimation and addition strategies to find simple unit fractions of sets (denominators 2, 3, 4, 5, 6, 8)	<ul style="list-style-type: none"> <li>• estimate the value of a given unit fraction of a set or quantity; check using repeated addition</li> <li>• use trial and improvement with repeated addition and grouping, eg <math>\frac{1}{3}</math> of 18 ... as <math>5 + 5 + 5 = 15</math> so let's try <math>6 + 6 + 6 = 18</math></li> </ul>

Learning Journey	Steps	Content	Details
	2	Using estimation and addition strategies to find simple proper fractions of sets (denominators 2, 3, 4, 5, 6, 8)	● estimate the value of a given proper fraction of a set or quantity; check using repeated addition
			● use trial and improvement with repeated addition and equal sharing, eg 2/3 of 18 ... as 5 + 5 + 5 = 15 so let's try 6 + 6 + 6 = 18 so 2/3 is 6 + 6
			● explore equivalence between halves, quarters, eighths and thirds and sixths
Fraction of a set	1	Finding the fraction of an amount by dividing into equal groups with models, within 100 (denominators up to 10)	● find the unit fraction of an amount by dividing an amount into equal groups
			● find the proper fraction of an amount by dividing an amount into equal groups
Introducing hundredths			
Introducing hundredths	1	Introducing hundredths	● recognise that hundredths come from 100 equal parts
			● find hundredths of objects, sets and shapes
			● find the whole from the part
			● use language 'one hundredth', 'two hundredths' etc
			● use symbols to represent fractions 1/100, 2/100 etc
			● recognise that hundredths come from dividing 1-digit numbers or quantities by 100

## 2 Measures

Length			
Length (metric)			
Learning Journey	Steps	Content	Details
Measure length (cm and m)	1	Measuring in metres and centimetres	<ul style="list-style-type: none"> <li>estimate and measure lengths and distances using metres and centimetres</li> </ul>
			<ul style="list-style-type: none"> <li>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'</li> </ul>
			<ul style="list-style-type: none"> <li>record lengths and distances using abbreviations for metres and centimetres, eg 1 m 25 cm</li> </ul>
Estimating length (cm)	1	Estimating and measuring to the nearest centimetre	<ul style="list-style-type: none"> <li>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'</li> </ul>
			<ul style="list-style-type: none"> <li>measure lengths and distances to the nearest centimetre using a centimetre ruler</li> </ul>
			<ul style="list-style-type: none"> <li>record lengths and distances using the abbreviation for centimetres (cm)</li> </ul>
Measure length (mm)	1	Introducing formal units for length: millimetres	<ul style="list-style-type: none"> <li>recognise the need for a formal unit smaller than the centimetre to measure length</li> </ul>
			<ul style="list-style-type: none"> <li>develop a personal reference for the approximate length of 1 mm</li> </ul>
			<ul style="list-style-type: none"> <li>recognise and model that there are 10 mm in 1 cm, ie <math>10\text{ mm} = 1\text{ cm}</math></li> </ul>
			<ul style="list-style-type: none"> <li>estimate and use the millimetre as a unit to measure lengths to the nearest millimetre using a ruler</li> </ul>
			<ul style="list-style-type: none"> <li>record lengths using the abbreviation for millimetres (mm), eg 5 cm 3 mm or 53 mm</li> </ul>
			<ul style="list-style-type: none"> <li>compare lengths with the same standard unit</li> </ul>
Ordering length (mm, cm, m)	1	Ordering lengths in metres and centimetres	<ul style="list-style-type: none"> <li>order lengths and distances using metres and centimetres</li> </ul>
	2	Ordering lengths in millimetres and centimetres	<ul style="list-style-type: none"> <li>compare lengths and distances using millimetres and centimetres</li> </ul>
Comparing length (mm, cm, m)	1	Comparing lengths in metres and centimetres	<ul style="list-style-type: none"> <li>compare lengths and distances using metres and centimetres</li> </ul>
	2	Comparing lengths in millimetres and centimetres	<ul style="list-style-type: none"> <li>compare lengths and distances using millimetres and centimetres</li> </ul>
	3	Comparing lengths of mixed units	<ul style="list-style-type: none"> <li>measure and compare lengths of mixed units, eg 1 m 45 cm</li> </ul>

Learning Journey	Steps	Content	Details
Appropriate units of measurement (mm, cm, m)	1	Selecting appropriate units of measurement: metres, centimetres, millimetres	<ul style="list-style-type: none"> <li>• explore the appropriateness of units when measuring length</li> <li>• select and justify the most appropriate metric unit to measure given lengths and distances</li> </ul>
Converting length (cm, m)	1	Converting between metres and centimetres (whole numbers only)	<ul style="list-style-type: none"> <li>• describe 1 m as 100 cm</li> <li>• convert between metres and centimetres using whole numbers, eg 3 m is the same as 300 cm</li> <li>• record measurement equivalents in a table</li> <li>• explain the relationship between the size of a unit and the number of units needed</li> </ul>
Add and subtract lengths	1	Adding and subtracting lengths	• add and subtract lengths of a single unit
	2	Adding and subtracting lengths of mixed units	• add and subtract lengths of mixed units, eg 1 m 45 cm + 2 m 15cm

Perimeter			
Perimeter (metric)			
Learning Journey	Steps	Content	Details
Measuring perimeter (cm)	1	Measuring perimeter in centimetres	• calculate the perimeter of two-dimensional shapes placed on centimetre squares
	2	Calculating the perimeter of a regular shape in centimetres	<ul style="list-style-type: none"> <li>• calculate the perimeter of a regular shape in centimetres using mental strategies such as repeated addition where all lengths are shown</li> <li>• calculate the perimeter of a regular shape in cm using mental strategies such as repeated addition where one or more lengths are missing</li> </ul>

Area			
Area (metric)			
Learning Journey	Steps	Content	Details
Area cm <sup>2</sup> and m <sup>2</sup>	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 cm <sup>2</sup> for recording area in square centimetres



Learning Journey	Steps	Content	Details
	2	Introducing formal units for area: the square metre	<ul style="list-style-type: none"> <li>● recognise the need for a larger formal unit to measure area and introduce square metres</li> </ul>
			<ul style="list-style-type: none"> <li>● 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'</li> </ul>
			<ul style="list-style-type: none"> <li>● identify everyday situations where square metres are an appropriate unit for measuring the area, eg floor of a room</li> </ul>
			<ul style="list-style-type: none"> <li>● recognise 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</li> </ul>
			<ul style="list-style-type: none"> <li>● introduce the abbreviation <math>m^2</math> for measuring area in square metres</li> </ul>
Area of rectangles $cm^2$ and $m^2$	1	Estimating and measuring areas of rectangles using efficient strategies and counting in square centimetres or metres	<ul style="list-style-type: none"> <li>● 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</li> </ul>
			<ul style="list-style-type: none"> <li>● estimate areas of rectangles (including squares) in square centimetres and/or square metres and then check by measuring</li> </ul>
			<ul style="list-style-type: none"> <li>● develop efficient strategies for counting square centimetres/metres when measuring areas of rectangles</li> </ul>
			<ul style="list-style-type: none"> <li>● draw possible rectangles on a grid to represent a given whole number rectangular area</li> </ul>
	2	Comparing and ordering rectangular areas using counting of standard metric units	<ul style="list-style-type: none"> <li>● compare two areas by measuring using standard metric units</li> <li>● order three or more areas by measuring using standard metric units</li> <li>● choose the most appropriate unit <math>cm^2</math> or <math>m^2</math> and justify selection</li> </ul>
Area of rectilinear figures	1	Measuring areas of rectilinear figures by decomposing into rectangles and counting units	<ul style="list-style-type: none"> <li>● recognise area as additive</li> <li>● decompose rectilinear figures into rectangles to find their area by tiling or using a grid overlay</li> </ul>
Area (customary measurement)			
Area - square inch	1	Introducing formal units for area: the square inch	<ul style="list-style-type: none"> <li>● establish the need for a formal unit to measure area and introduce square inches</li> </ul>
			<ul style="list-style-type: none"> <li>● develop a sense of the area of 1 square inch and identify surfaces that have area 'about 1 square inch', 'less than 1 square inch' and 'greater than 1 square inch'</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• identify everyday situations where square inches are an appropriate unit for measuring area</li> <li>• introduce the abbreviations 'square in', 'sq in' and "in<sup>2</sup>" for recording area in square inches</li> </ul>
Area - square foot	1	Introducing formal units for area: the square foot	<ul style="list-style-type: none"> <li>• recognise the need for a larger formal unit to measure area and introduce square feet</li> <li>• develop a sense of the area of 1 square foot and identify surfaces that have area 'about 1 square foot', 'less than 1 square foot' and 'greater than 1 square foot'</li> <li>• identify everyday situations where square feet are an appropriate unit for measuring the area, eg floor of a room</li> </ul>
Area - square inches and feet	1	Estimating and measuring areas of rectangles using efficient strategies and counting in square inches or feet	<ul style="list-style-type: none"> <li>• measure the area of rectangles (including squares) using square inches and/or square feet (both tiling and using grid overlay) using whole number side lengths only</li> <li>• estimate areas of rectangles (including squares) in square inches and/or square feet and then check by measuring</li> <li>• develop efficient strategies for counting square inches/feet when measuring areas of rectangles</li> <li>• draw possible rectangles on a grid to represent a given whole-number rectangular area</li> </ul>

Volume and Capacity			
Volume and capacity (metric)			
Learning Journey	Steps	Content	Details
Introducing volume and capacity (L)	1	Introducing formal units for volume and capacity: litres	<ul style="list-style-type: none"> <li>• recognise and explain the need for formal units to measure volume and capacity</li> <li>• develop a personal reference for one litre and fractions of 1 litre (quarters and halves); relate the litre to familiar everyday containers, eg milk cartons</li> <li>• recognise that one-litre containers can be a variety of shapes</li> <li>• record volumes and capacities using the abbreviation for litres (L)</li> </ul>
Estimating, comparing and measuring volume (mL, L)	1	Estimating, comparing and measuring in litres	<ul style="list-style-type: none"> <li>• estimate and measure capacities to the nearest litre</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>compare and order 2 or more containers by capacity measured in litres, including the capacity of commercially packaged objects whose capacity is stated in litres</li> <li>record volumes and capacities using the abbreviation for litres (L)</li> </ul>
	2	Estimating, comparing and measuring in mixed units of volume (L and mL)	<ul style="list-style-type: none"> <li>estimate and measure capacities to the nearest litre and millilitre</li> </ul>
	3	Comparing and ordering mixed units of volume (L and mL)	<ul style="list-style-type: none"> <li>compare and order 2 or more containers by capacity measured in litres, including the capacity of commercially packaged objects whose capacity is stated in litres and millilitres using inequality symbols (&lt;, &gt; or =)</li> </ul>
Add and subtract capacity (mL, L)	1	Adding and subtracting litres or millilitres	<ul style="list-style-type: none"> <li>add and subtract litre measurements</li> <li>add and subtract millilitre measurements</li> </ul>
Measuring volume in cm <sup>3</sup>	1	Estimating and measuring volume using cubic centimetre blocks	<ul style="list-style-type: none"> <li>use the cubic centimetre as a unit to measure volumes by packing small containers with cubic-centimetre blocks and describing in terms of layers, eg '2 layers of 10 cubic-centimetre blocks'</li> <li>construct three-dimensional objects using cubic-centimetre blocks and count the blocks to determine the volumes of the objects; devise and explain strategies for counting blocks</li> <li>compare the volumes of 2 or more objects made from cubic-centimetre blocks by counting blocks</li> <li>record volumes using the abbreviation for cubic centimetres (cm<sup>3</sup>)</li> </ul>

Mass			
Mass (metric)			
Learning Journey	Steps	Content	Details
Mass (kg)	1	Introducing formal units for mass: the kilogram	<ul style="list-style-type: none"> <li>establish the need for formal units to measure mass and introduce the kilogram</li> <li>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</li> <li>identify everyday situations where kilograms are an appropriate unit for measuring the mass</li> </ul>

Learning Journey	Steps	Content	Details
	2	Measuring mass in kilograms	<ul style="list-style-type: none"> <li>introduce the abbreviation 'kg' for recording mass in kilograms</li> </ul>
			<ul style="list-style-type: none"> <li>compare and order 2 or more objects by mass measured to the nearest kilogram using carried scales</li> </ul>
			<ul style="list-style-type: none"> <li>estimate the number of objects that have a total mass of 1 kilogram and check by measuring</li> </ul>
			<ul style="list-style-type: none"> <li>estimate mass using a personal reference for a kilogram</li> </ul>
			<ul style="list-style-type: none"> <li>record mass using the abbreviation 'kg'</li> </ul>
			<ul style="list-style-type: none"> <li>compare masses using uniform informal units and the symbols &gt;, =, &lt;</li> <li>compare masses using simple scaling by integers, eg 'five times as heavy'</li> </ul>

Time			
Learning Journey	Steps	Content	Details
Telling the time - analogue	1	Telling time to five minutes (analogue)	<ul style="list-style-type: none"> <li>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 numeral to the next and the time it takes for the minute hand to complete one revolution</li> </ul>
			<ul style="list-style-type: none"> <li>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 numeral to the next and the time it takes for the hour hand to complete 1 revolution</li> </ul>
			<ul style="list-style-type: none"> <li>read time on analogue clocks to 5 minutes using the terms 'o'clock', 'past' and 'to', including 'half past', 'quarter past' and 'quarter to' and write in words</li> </ul>
			<ul style="list-style-type: none"> <li>position or draw the hands on an analogue clock to show time to 5 minutes where the time is given using the terms 'o'clock', 'past' and 'to', including 'half past', 'quarter past' and 'quarter to'</li> </ul>
Telling the time - digital	1	Telling time to five minutes (digital)	<ul style="list-style-type: none"> <li>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'</li> </ul>
			<ul style="list-style-type: none"> <li>record times on analogue clocks to 5 minutes in 12-hour digital format</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>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</li> <li>connect 12-hour digital displays for times to 5 minutes to their corresponding display on an analogue clock</li> </ul>
Units of time	1	Recalling relationships between units of time	<ul style="list-style-type: none"> <li>know and recall that 1 hour = 60 minutes, 1 minute = 60 seconds</li> <li>know and recall that 1 day = 24 hours</li> <li>know and recall that 1 year = 365 days and that 1 leap year = 366 days and relate this to the rotation of the earth</li> <li>know and recall that 1 week = 7 days, 1 fortnight = 2 weeks</li> <li>solve problems relate to the relationship between units of time</li> </ul>
Comparing and ordering time	1	Comparing and ordering time in terms of seconds and minutes	<ul style="list-style-type: none"> <li>order time in terms of seconds and minutes</li> <li>compare time in terms of seconds and minutes using &lt;, &gt; or =</li> </ul>
Time and Roman numerals	1	Telling the time five minutes using Roman Numeral clocks	<ul style="list-style-type: none"> <li>observe and describe the movement of the minute hand as time passes, including the time it takes for the minute hand to move from 1 numeral to the next and the time it takes for the minute hand to complete 1 revolution</li> </ul>
Start and end times	1	Calculating start and end times (12 and 24 hour)	<ul style="list-style-type: none"> <li>calculate the end time of events using start and elapsed times using models and tables</li> <li>calculate the start time of events using elapsed and finishing times using models and tables</li> </ul>
Reading a calendar			
Writing dates	1	Writing dates	<ul style="list-style-type: none"> <li>identify a day/date on a calendar and write the date using the appropriate notation eg 11/5/17</li> </ul>

Temperature			
Temperature (Celsius)			
Learning Journey	Steps	Content	Details
Introducing thermometers (Celsius)	1	Introducing thermometers	<ul style="list-style-type: none"> <li>estimate temperature using personal reference</li> <li>use a standard thermometer to determine whether temperature is rising or falling</li> <li>relate thermometers to the number line</li> <li>introduce the unit of degrees to record temperatures</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• recognise and read temperatures in everyday situations, eg weather report, cooking</li> </ul>

### 3 Geometry

Introducing 2D shape			
2D shape			
Learning Journey	Steps	Content	Details
Quadrilaterals	1	Identifying side length properties of quadrilaterals	<ul style="list-style-type: none"> <li>• measure and describe the side properties of the special quadrilaterals, including parallelograms, rectangles, rhombuses, squares, trapeziums and kites</li> </ul>
			<ul style="list-style-type: none"> <li>• identify and sort quadrilaterals by their side lengths and number of parallel sides</li> </ul>
	2	Identifying right angles in quadrilaterals	<ul style="list-style-type: none"> <li>• identify right angles in quadrilaterals</li> </ul>
			<ul style="list-style-type: none"> <li>• sort quadrilaterals by those with and without right angles</li> </ul>
	3	Sorting and naming quadrilaterals	<ul style="list-style-type: none"> <li>• sort the special quadrilaterals; explain the attribute used to sort, eg angle, parallel sides, side lengths; classify quadrilaterals into categories and sub-categories</li> </ul>
			<ul style="list-style-type: none"> <li>• identify and name the special quadrilaterals in different orientations, including parallelograms, rectangles, rhombuses, squares, trapeziums and kites</li> <li>• explore and explain the given names of the quadrilaterals, eg parallelogram</li> </ul>
Comparing and describing two-dimensional shapes	1	Comparing and describing two-dimensional shapes, including special quadrilaterals	<ul style="list-style-type: none"> <li>• identify and name a shape given a description of its features</li> </ul>
			<ul style="list-style-type: none"> <li>• sort two-dimensional shapes using given attributes, eg number of sides, number of parallel sides</li> </ul>
			<ul style="list-style-type: none"> <li>• compare similarities and differences between two-dimensional shapes, including the special quadrilaterals</li> </ul>
	2	Identifying regular and irregular two-dimensional shapes	<ul style="list-style-type: none"> <li>• identify a regular shape from a group of irregular shapes, eg a regular pentagon in a group of irregular pentagons</li> </ul>
			<ul style="list-style-type: none"> <li>• identify a regular shape from a group of irregular shapes, eg a regular pentagon in a group of irregular pentagons</li> </ul>
Identifying lines	1	Identifying parallel sides in quadrilaterals	<ul style="list-style-type: none"> <li>• recognise quadrilaterals that are not rhombuses, rectangles and squares</li> </ul>
			<ul style="list-style-type: none"> <li>• draw quadrilaterals that are not rhombuses, rectangles and squares</li> </ul>
			<ul style="list-style-type: none"> <li>• manipulate and compare the special quadrilaterals; identify parallel sides</li> <li>• identify and sort quadrilaterals by their number of parallel lines (if any)</li> </ul>

Learning Journey	Steps	Content	Details
	2	Identifying horizontal and vertical lines on shapes and objects	<ul style="list-style-type: none"> <li>identify horizontal and vertical lines on shapes and objects, eg, alphabet letters, numbers, shapes and environmental shapes</li> </ul>
	3	Sorting horizontal and vertical lines on shapes and objects	<ul style="list-style-type: none"> <li>sort objects in a table based on properties</li> </ul>
<b>Lines of symmetry</b>			
Lines of symmetry	1	Recognising line symmetry of shapes	<ul style="list-style-type: none"> <li>define the line of symmetry of a two-dimensional shape as a line across which the shape can be folded into 2 matching parts</li> </ul>
			<ul style="list-style-type: none"> <li>identify a line of symmetry in two-dimensional shapes</li> </ul>
			<ul style="list-style-type: none"> <li>sort two-dimensional shapes according to whether they are symmetrical or not</li> </ul>

3D shape			
3D shape			
Learning Journey	Steps	Content	Details
Exploring prisms	1	Introducing rectangular prisms	<ul style="list-style-type: none"> <li>manipulate and describe the attributes of rectangular prisms</li> </ul>
			<ul style="list-style-type: none"> <li>recognise that a cube is a special kind of rectangular prism</li> </ul>
			<ul style="list-style-type: none"> <li>recognise rectangular prisms in the environment and drawings</li> </ul>
	2	Exploring prisms	<ul style="list-style-type: none"> <li>manipulate and describe the attributes of prisms</li> </ul>
			<ul style="list-style-type: none"> <li>recognise that a cube is a special kind of prism</li> </ul>
			<ul style="list-style-type: none"> <li>recognise prisms in the environment and drawings</li> </ul>
Comparing 3D shapes	1	Comparing, sorting and naming prisms and pyramids	<ul style="list-style-type: none"> <li>compare and sort prisms and pyramids by their geometric properties, eg number of edges, number of vertices</li> </ul>
			<ul style="list-style-type: none"> <li>describe and name prisms and pyramids by the shape of their base</li> </ul>
	2	Comparing three-dimensional objects including pyramids, prisms, cones, spheres and cylinders	<ul style="list-style-type: none"> <li>describe similarities and differences between prisms (including cubes), pyramids, cylinders, cones and spheres, eg surfaces, faces, edges and vertices</li> <li>recognise and describe the use of three-dimensional objects in a variety of contexts, eg buildings, packaging</li> <li>identify and name three-dimensional objects as prisms (including cubes), pyramids, cylinders, cones and spheres</li> </ul>



Learning Journey	Steps	Content	Details
Make 3D shapes	1	Making basic models of three-dimensional objects	<ul style="list-style-type: none"> <li>• 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</li> </ul>
			<ul style="list-style-type: none"> <li>• 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</li> </ul>
Exploring nets	1	Introducing nets of rectangular prisms	<ul style="list-style-type: none"> <li>• deconstruct everyday packages that are prisms (including cubes) to create nets, eg cut up tissue boxes</li> </ul>
			<ul style="list-style-type: none"> <li>• make connections between nets and the two-dimensional shapes of the faces</li> </ul>
			<ul style="list-style-type: none"> <li>• recognise that a net requires each face to be connected to at least 1 other face</li> </ul>
			<ul style="list-style-type: none"> <li>• 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</li> </ul>
	2	Introducing nets of prisms	<ul style="list-style-type: none"> <li>• deconstruct everyday packages that are prisms (including cubes) to create nets, eg cut up tissue boxes</li> </ul>
			<ul style="list-style-type: none"> <li>• make connections between nets and the two-dimensional shapes of the faces</li> </ul>
			<ul style="list-style-type: none"> <li>• recognise that a net requires each face to be connected to at least 1 other face</li> </ul>
			<ul style="list-style-type: none"> <li>• 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</li> </ul>
			<ul style="list-style-type: none"> <li>• compare two-dimensional shapes to parts of three-dimensional objects in the environment</li> </ul>

Angles			
Angles			
Learning Journey	Steps	Content	Details
Introducing angles	1	Introducing the concept of angles up to 180°	<ul style="list-style-type: none"> <li>• understand and describe angles as an amount of turning, openings</li> </ul>
			<ul style="list-style-type: none"> <li>• identify angles in everyday situations, eg door openings, designs, between the arms of a clock</li> </ul>
			<ul style="list-style-type: none"> <li>• recognise that angles are formed whenever 2 lines meet or when 2 rays meet at a common endpoint</li> </ul>

Learning Journey	Steps	Content	Details
	2	Introducing right angles	<ul style="list-style-type: none"> <li>• identify right angles on two-dimensional shapes and three-dimensional objects</li> </ul>
			<ul style="list-style-type: none"> <li>• identify right angles in pictures, designs and the environment</li> </ul>
			<ul style="list-style-type: none"> <li>• identify right angles in line diagrams</li> </ul>
			<ul style="list-style-type: none"> <li>• use and interpret the symbol <math>\perp</math> in diagrams to represent a right angle</li> </ul>
			<ul style="list-style-type: none"> <li>• define perpendicular lines and identify them in pictures, designs and the environment</li> </ul>
			<ul style="list-style-type: none"> <li>• recognise that a pair of perpendicular lines form 4 right angles</li> </ul>
	3	Recognising angles as a description of a turn	<ul style="list-style-type: none"> <li>• recognise angles as a measure of a turn (<math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{3}{4}</math>) and use appropriate language to describe the rotation such as quarter turn, half turn, clockwise and anti-clockwise</li> </ul>

Position, movement and direction			
Transformations			
Learning Journey	Steps	Content	Details
Introducing transformations	1	Introducing transformations: Slides (translations)	<ul style="list-style-type: none"> <li>• 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'</li> </ul>
			<ul style="list-style-type: none"> <li>• identify and describe a one-step slide of a shape using the term 'slide'</li> </ul>
			<ul style="list-style-type: none"> <li>• perform a one-step slide of a shape using physical materials and record the result without the use of digital technology</li> </ul>
			<ul style="list-style-type: none"> <li>• perform a one-step slide of a shape and record the result using digital technology</li> </ul>
			<ul style="list-style-type: none"> <li>• predict and draw the result of a one-step slide on a given shape</li> </ul>
	2	Introducing transformations: Flips (reflections)	<ul style="list-style-type: none"> <li>• 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'</li> </ul>
			<ul style="list-style-type: none"> <li>• identify and describe a one-step flip of a shape using the term 'flip'</li> </ul>
			<ul style="list-style-type: none"> <li>• perform a one-step flip of a shape using physical materials and record the result without the use of digital technology</li> </ul>
			<ul style="list-style-type: none"> <li>• perform a one-step flip of a shape and record the result using digital technology</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"><li>• predict and draw the result of a one-step flip on a given shape</li></ul>
	3	Introducing transformations: Turns (rotations)	<ul style="list-style-type: none"><li>• 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</li></ul>
			<ul style="list-style-type: none"><li>• recognise and describe turns as 'clockwise' or 'anti-clockwise'</li></ul>
			<ul style="list-style-type: none"><li>• 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'</li></ul>
			<ul style="list-style-type: none"><li>• 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</li></ul>
			<ul style="list-style-type: none"><li>• 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</li></ul>
			<ul style="list-style-type: none"><li>• predict and draw the result of one-step quarter turns, half turns and three-quarter turns on a given shape</li><li>• explore and describe the number of half turns and quarter turns required for a full-turn</li></ul>
Reading maps			
Grid-referenced maps	1	Interpreting grid-referenced maps	<ul style="list-style-type: none"><li>• establish that grid referencing on maps allows for more accurate description of features/locations</li></ul>
			<ul style="list-style-type: none"><li>• understand the structure (letter then number, horizontal then vertical) and meaning of grid references (everything in that grid square)</li></ul>
			<ul style="list-style-type: none"><li>• use grid references to describe features/locations on maps</li></ul>
			<ul style="list-style-type: none"><li>• identify features/locations on maps given their grid reference</li></ul>
	2	Drawing pathways on grid-referenced maps	<ul style="list-style-type: none"><li>• draw a path from 1 feature to another on a grid-referenced map given the grid reference of each feature</li></ul>
<ul style="list-style-type: none"><li>• use grid references to describe a path from 1 feature to another on a grid-referenced map</li></ul>			

## 4 Statistics and data

Data			
Representing data			
Learning Journey	Steps	Content	Details
Picture graphs/pictograms	1	Representing data in a picture graph with a scale of 1, 2, 5 or 10	<ul style="list-style-type: none"> <li>• construct vertical and horizontal picture graphs with equal spacing</li> </ul>
			<ul style="list-style-type: none"> <li>• choose an appropriate title and label the axis</li> </ul>
			<ul style="list-style-type: none"> <li>• choose an appropriate picture or symbol for a picture graph and state the key used (1, 2, 5 or 10)</li> </ul>
			<ul style="list-style-type: none"> <li>• solve comparison, sum and difference (one-step and two-step problems) problems related to the data display; make conclusions</li> </ul>
	2	Reading data in a picture graph with a scale of 1, 2, 5, or 10	<ul style="list-style-type: none"> <li>• ask and answer one step and two step questions, eg, 'how many more students like reading than art?'</li> </ul>
			<ul style="list-style-type: none"> <li>• make conclusions about data presented in a column graph, eg 'Football is the most popular sport for students in Year 3 at our school'</li> </ul>
			<ul style="list-style-type: none"> <li>• compare column graphs with picture graphs</li> </ul>
			<ul style="list-style-type: none"> <li>• evaluate simple statements made by others relating to data in a picture graph</li> </ul>
Bar graphs and column charts	1	Representing data in a column graph with a scale of 1, 2, 5 or 10	<ul style="list-style-type: none"> <li>• construct a vertical or horizontal column graph using grid paper for support, where appropriate use a scale of eg 2, 5, or 10 to 1</li> </ul>
			<ul style="list-style-type: none"> <li>• use graphing software to enter data and create column graphs that represent data</li> </ul>
			<ul style="list-style-type: none"> <li>• mark equal spaces on axes, name and label axes, and choose appropriate titles for column graphs; use the terms 'horizontal axis', 'vertical axis' and 'axes' appropriately</li> </ul>
			<ul style="list-style-type: none"> <li>• 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 column graph, eg 'Football is the most popular sport for students in Year 3 at our school'</li> </ul>
	2	Reading data in a column graph with a scale of 1, 2, 5 or 10	<ul style="list-style-type: none"> <li>• ask and answer one-step and two-step questions, eg, 'How many more students like reading than art?'</li> </ul>
			<ul style="list-style-type: none"> <li>• make conclusions about data presented in a column graph, eg 'Football is the most popular sport for students in Year 3 at our school'</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"><li>• compare column graphs with picture graphs</li></ul>
			<ul style="list-style-type: none"><li>• evaluate simple statements made by others relating to data in a column graph</li></ul>
	3	Reading and interpreting grouped and/or ordered data in a bar graph with one-to-one correspondence	<ul style="list-style-type: none"><li>• become familiar with grouped/ordered data in a bar graph</li><li>• ask and answer questions related to grouped or ordered data in a bar graph</li></ul>
Tables	1	Representing and reading category data in a table	<ul style="list-style-type: none"><li>• represent primary or secondary data in a given table using appropriate headings and layout</li></ul>
			<ul style="list-style-type: none"><li>• interpret data in a table; ask and answer summative and comparative questions</li></ul>
	2	Reading and interpreting tables and bar charts/graphs (block style)	<ul style="list-style-type: none"><li>• read data from tables and bar charts/graphs</li></ul>
			<ul style="list-style-type: none"><li>• interpret data from tables and bar charts/graphs</li></ul>
			<ul style="list-style-type: none"><li>• draw conclusions related to the data in the display</li></ul>
	3	Collecting and recording category data in tables	<ul style="list-style-type: none"><li>• create a list of categories for efficient data collection and present in a table format, eg 'Which sport is the most popular with members of our class?'</li></ul>
			<ul style="list-style-type: none"><li>• sort data from a simple survey and create a list or table to organise the data, eg sort data on the number of children in a class.</li></ul>
			<ul style="list-style-type: none"><li>• determine which data should be collected and presented in the table</li></ul>
	4	Constructing and interpreting tables	<ul style="list-style-type: none"><li>• represent given or collected categorical data in tables using appropriate headings and structure</li></ul>
<ul style="list-style-type: none"><li>• interpret data in tables to solve problems; answer comparative and summative questions</li></ul>			
Line plots/dot plots	1	Representing and reading line plots with both whole number and fractional data (halves or quarters)	<ul style="list-style-type: none"><li>• measure lengths using rulers marked with halves and fourths of an inch; measure a single object multiple times to the nearest whole inch, half inch and quarter inch</li></ul>
			<ul style="list-style-type: none"><li>• show the data by making a line plot, where the horizontal scale is marked off in appropriate units - whole numbers, halves, or quarters</li></ul>
			<ul style="list-style-type: none"><li>• compare variations in the data displays</li></ul>
Statistical investigation process			
Conducting a simple statistical investigation	1	Conducting a simple statistical investigation (tables, lists, picture graphs, bar graphs)	<ul style="list-style-type: none"><li>• determine what data to gather in order to investigate a statistical question</li></ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• collect, record and sort data</li> <li>• represent category data in a table, list, picture graph or column graph (including many-to-one correspondence)</li> <li>• make a simple concluding statement based on data collected</li> </ul>
<b>Cartesian products and multiplication</b>			
Relating Cartesian products and multiplication	1	Relating Cartesian products and multiplication	<ul style="list-style-type: none"> <li>• use rectangular displays or tree diagrams to find the total number of combinations possible when given 2 characteristics, eg find the total number of possible outfits given 3 pants and 2 t-shirts</li> <li>• relate multiplication to finding the total number of possible combinations</li> </ul>

Probability and chance			
Introducing chance and probability			
Learning Journey	Steps	Content	Details
Chance experiments	1	Introducing chance experiments (with equal outcomes)	<ul style="list-style-type: none"> <li>• use the term 'outcome' to describe any possible result of a chance experiment</li> </ul>
			<ul style="list-style-type: none"> <li>• 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</li> </ul>
			<ul style="list-style-type: none"> <li>• predict the number of times each outcome should occur in a chance experiment involving a set number of trials</li> </ul>
	2	Conducting chance experiments (with equal outcomes)	<ul style="list-style-type: none"> <li>• 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</li> </ul>
			<ul style="list-style-type: none"> <li>• keep a tally and graph the results of a chance experiment</li> </ul>
			<ul style="list-style-type: none"> <li>• 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'</li> </ul>
	3	Introducing chance experiments (with unequal outcomes)	<ul style="list-style-type: none"> <li>• use the term 'outcome' to describe any possible result of a chance experiment</li> </ul>
			<ul style="list-style-type: none"> <li>• predict and list all possible outcomes in a chance experiment, eg describe the probability of spinning red when you spin a spinner that has <math>\frac{1}{2}</math> shaded yellow, <math>\frac{1}{4}</math> shaded blue and <math>\frac{1}{4}</math> shaded red</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• predict the number of times each outcome should occur in a chance experiment involving a set number of trials</li> </ul>
	4	Conducting chance experiments (with unequal outcomes)	<ul style="list-style-type: none"> <li>• predict and list all possible outcomes in a chance experiment, eg describe the probability of spinning red when you spin a spinner that has <math>\frac{1}{2}</math> shaded yellow, <math>\frac{1}{4}</math> shaded blue and <math>\frac{1}{4}</math> shaded red</li> <li>• keep a tally and graph the results of a chance experiment</li> <li>• 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'</li> </ul>
	5	Introducing chance situations	<ul style="list-style-type: none"> <li>• predict and record all possible combinations in a chance situation, eg list all possible outfits when choosing from three different T-shirts and 2 different pairs of shorts</li> <li>• record and explain possible combinations using a list, table or diagram</li> <li>• repeat a chance experiment several times and discuss why the results vary</li> </ul>

## Part II

# Grade 4

## 5 Number

Number and place value			
Numbers up to 5 digits			
Learning Journey	Steps	Content	Details
Reading and writing numbers up to 5 digits	1	Reading and writing numbers up to 5 digits	<ul style="list-style-type: none"> <li>• apply an understanding of place value to read numbers up to 5 digits</li> </ul>
			<ul style="list-style-type: none"> <li>• apply an understanding of place value to write numbers up to 5 digits</li> </ul>
Place value up to 5 digit numbers	1	Identifying the place value of digits in numbers up to 5 digits	<ul style="list-style-type: none"> <li>• state the place value of digits in numbers of up to 5 digits</li> </ul>
			<ul style="list-style-type: none"> <li>• pose and answer questions that extend place value understanding of numbers, eg 'What happens if I rearrange the digits in the number 12 345?', 'How can I rearrange the digits to make the largest number?'</li> </ul>
			<ul style="list-style-type: none"> <li>• represent and describe whole numbers to 10 000 pictorially and symbolically</li> </ul>
	2	Finding the number 1000 more or 1000 less than a given number	<ul style="list-style-type: none"> <li>• apply an understanding of place value to find the number 1000 more or 1000 less</li> </ul>
	3	Understanding the relationship between place value positions	<ul style="list-style-type: none"> <li>• recognise that in a multi-digit number a digit in 1 place represents 10 times as much as it represents in the place to its right</li> </ul>
			<ul style="list-style-type: none"> <li>• recognise that in a multi-digit number a digit in 1 place represents 1/10 of what it represents in the place to its left</li> </ul>
Comparing and ordering numbers to 5 digits	1	Comparing 5-digit numbers using words and symbols	<ul style="list-style-type: none"> <li>• compare two 5-digit numbers using words and symbols &lt;, =, &gt;</li> </ul>
	2	Ordering numbers up to and including 5 digits	<ul style="list-style-type: none"> <li>• arrange numbers of up to and including 5 digits in ascending and descending order</li> </ul>
	3	Ordering 5-digit numbers	<ul style="list-style-type: none"> <li>• arrange numbers up to 5 digits in ascending and descending order</li> </ul>
Partitioning up to 5 digit numbers	1	Using place value to partition 5-digit numbers	<ul style="list-style-type: none"> <li>• use place value to partition numbers of up to 5 digits, eg 67 012 is 60 000 + 7000 + 10 + 2</li> </ul>
	2	Using non-standard partitioning with 5-digit numbers	<ul style="list-style-type: none"> <li>• partition numbers of up to 5 digits in non-standard forms, eg 67 000 as 50 000 + 17 000</li> </ul>
Rounding 5 digit numbers	1	Rounding 5-digit numbers	<ul style="list-style-type: none"> <li>• round to the nearest 10, 100, 1000 or 10 000</li> </ul>
	2	Rounding up to 5-digit numbers to the nearest 10, 100 or 1000	<ul style="list-style-type: none"> <li>• round up to the nearest 10, 100 or 1000</li> </ul>



Learning Journey	Steps	Content	Details
<b>Roman numerals to 100</b>			
Reading and writing in Roman numerals	1	Reading and writing Roman numerals to 100 (I to C)	<ul style="list-style-type: none"> <li>• read and write Roman numerals to 100 (I to C)</li> <li>• understand that over time the number system changed to include the concept of 0 and place value</li> </ul>
	2	Rounding Roman numerals up to 100 to the nearest 10	• round a Roman numeral to the nearest 10
Rounding Roman numerals	1	Rounding Roman numerals up to 100 to the nearest 10	• round a Roman numeral to the nearest 10
	2	Rounding Roman numerals up to 1000 to the nearest 100	• model a Roman numeral to the nearest 100
<b>Negative numbers</b>			
Negative numbers	1	Introducing negative integers	• count backwards through 0 to include negative numbers
	2	Interpreting negative integers in context	• interpret negative integers in context eg, difference in temperature, or when finding the difference between two numbers, or halfway point
<b>Odd and even numbers</b>			
Using odd and even numbers	1	Using the properties of odd and even numbers	• investigate and generalise the result of adding, subtracting and multiplying pairs of even numbers, pairs of odd numbers, or one even and one odd number, eg $\text{even} + \text{odd} = \text{odd}$ , $\text{odd} \times \text{odd} = \text{odd}$
			• explain why the result of a calculation is even or odd with reference to the properties of the numbers used in the calculation
			• predict whether the answer to a calculation will be even or odd by using the properties of the numbers in the calculation
			• investigate the place value of digits within odd and even numbers

<b>Addition and subtraction</b>			
<b>Adding with models</b>			
Learning Journey	Steps	Content	Details
Add a 1-digit to a 3-digit numbers - models	1	Adding a 1-digit number and a 3-digit number, no regrouping, using models	• add a 1-digit number to a 3-digit number using models and tables, eg $234 + 3 = ?$
<b>Subtracting with models</b>			
Subtract a 1-digit from a 3-digit number - models	1	Subtracting a 1-digit number from a 3-digit number, no regrouping, using models	• subtract a 1-digit number from a 3-digit number using models and tables, eg $356 - 4 = ?$
	2	Subtracting a 1-digit number from a 3-digit number (exchange within 10)	• subtract a 1-digit number from a 3-digit number with exchange within 10, using models and tables, eg $346 - 7 = ?$

Learning Journey	Steps	Content	Details
	3	Solving word problems by subtracting a 1-digit number from a 3-digit number, exchange within 10	<ul style="list-style-type: none"> <li>• solve word problems by subtracting a 1-digit number from a 3-digit number, exchange within 10</li> </ul>
<b>Formal method addition 2-digit numbers</b>			
Addition of 2-digit numbers - no regrouping	1	Using a formal written algorithm for addition calculations up to two-digit numbers (no regrouping)	<ul style="list-style-type: none"> <li>• apply algorithms to solve problems without regrouping, with the same number of places and with a different number of places</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>
Addition of 2-digit numbers - regrouping	1	Using a formal written algorithm for addition calculations up to two-digit numbers (with regrouping)	<ul style="list-style-type: none"> <li>• 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</li> </ul>
<b>Formal method addition 3-digit numbers</b>			
Addition up to 3-digit numbers - no regrouping	1	Using a formal written algorithm for addition calculations up to three-digit numbers (no regrouping)	<ul style="list-style-type: none"> <li>• apply algorithms to solve problems without regrouping, with the same number of places and with a different number of places</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>
Addition up to 3-digit numbers - regrouping	1	Using a formal written algorithm for addition calculations with three-digit and one-digit numbers (with regrouping)	<ul style="list-style-type: none"> <li>• apply algorithms to solve problems with regrouping; include opportunities for students to write their own algorithms with digits in correct place value positions; include word problems</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>
	2	Using a formal written algorithm for addition calculations with three-digit and two-digit numbers (with regrouping)	<ul style="list-style-type: none"> <li>• apply algorithms to solve problems with regrouping in 1 or more places; include opportunities for students to write their own algorithms with digits in correct place value positions; include word problems</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>
	3	Using a formal written algorithm for addition calculations of two three-digit numbers (with regrouping)	<ul style="list-style-type: none"> <li>• apply algorithms to solve problems with regrouping in 1 or more places; include opportunities for students to write their own algorithms with digits in correct place value positions; include word problems</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>

Learning Journey	Steps	Content	Details
	4	Using a formal written algorithm for addition calculations up to three-digit numbers (with regrouping)	<ul style="list-style-type: none"> <li>• 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</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>
<b>Formal method addition 4-digit numbers</b>			
Addition up to 4-digit numbers - no regrouping	1	Using a formal written algorithm for addition calculations up to four-digit numbers (no regrouping)	<ul style="list-style-type: none"> <li>• apply algorithms to solve problems without regrouping, with the same number of places and with a different number of places</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>
Addition up to 4-digit numbers - regrouping	1	Using a formal written algorithm for addition calculations up to four-digit numbers (with regrouping)	<ul style="list-style-type: none"> <li>• 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</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>
	2	Using a formal written algorithm for addition calculations for two 4-digit numbers (with one exchange)	<ul style="list-style-type: none"> <li>• apply algorithms to solve problems with one exchange, with the same number of places and with a different number of places using models (bar models, place value models, place value grid, bar models)</li> <li>• solve problems using models (bar models, place value models, place value grid, bar models)</li> </ul>
<b>Formal method addition 5-digit numbers</b>			
Addition up to 5-digit numbers - no regrouping	1	Using a formal written algorithm for addition calculations up to five-digit numbers (no regrouping)	<ul style="list-style-type: none"> <li>• apply algorithms to solve problems without regrouping, with the same number of places and with a different number of places; include opportunities for students to write their own algorithms with digits in correct place value positions; include word problems</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>

Learning Journey	Steps	Content	Details
Addition up to 5-digit numbers - regrouping	1	Using a formal written algorithm for addition calculations up to five-digit numbers (with regrouping)	<ul style="list-style-type: none"> <li>• 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</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>
<b>Formal method to add 3 or more numbers</b>			
Formal method to add 3 or more numbers (2-digits)	1	Using a formal written algorithm for addition calculations of 3 or more addends up to two digits (with and without regrouping)	<ul style="list-style-type: none"> <li>• apply algorithms with 3 or more addends with the same number of places and with a different number of places</li> </ul>
Formal method to add 3 or more numbers (3-digits)	1	Using a formal written algorithm for addition calculations of 3 or more addends up to 3 digits (with and without regrouping)	<ul style="list-style-type: none"> <li>• apply algorithms with 3 or more addends with the same number of places and with a different number of places; include number range that involves regrouping more than 1 ten or hundred; include word problems</li> <li>• use estimation to check the reasonableness of solutions</li> </ul>
Formal method to add 3 or more numbers (4-digits)	1	Using a formal written algorithm for addition calculations of 3 or more addends up to four digits (with and without regrouping)	<ul style="list-style-type: none"> <li>• apply algorithms with 3 or more addends with the same number of places and with a different number of places; include number range that involves regrouping more than 1 ten, hundred or thousand; include word problems</li> </ul>
Formal method to add 3 or more numbers (5-digits)	1	Using a formal written algorithm for addition calculations of 3 or more addends up to 5 digits (with and without regrouping)	<ul style="list-style-type: none"> <li>• apply algorithms with 3 or more addends with the same number of places and with a different number of places; include number range that involves regrouping more than 1 in one or more places; include word problems</li> </ul>
<b>Formal method to subtract (no exchange)</b>			
Subtraction of up to 2-digit numbers (no exchange)	1	Using a formal written algorithm to record subtraction calculations involving up to two-digit numbers (without decomposing)	<ul style="list-style-type: none"> <li>• 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</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>

Learning Journey	Steps	Content	Details
Subtraction of up to 3-digit numbers (no exchange)	1	Using a formal written algorithm to record subtraction calculations involving up to three-digit numbers (without decomposing)	<ul style="list-style-type: none"> <li>• 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</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>
	2	Using a formal written algorithm and models for addition calculations of 2 three-digit numbers (no regrouping)	<ul style="list-style-type: none"> <li>• add two 3-digit numbers using models, eg base 10, part-whole models, bar models</li> </ul>
Subtraction up to 4-digit numbers (no exchange)	1	Using a formal written algorithm to record subtraction calculations involving up to four-digit numbers (without decomposing)	<ul style="list-style-type: none"> <li>• 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</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>
	1	Using a formal written algorithm to record subtraction calculations involving up to five-digit numbers (without decomposing)	<ul style="list-style-type: none"> <li>• 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</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>

Learning Journey	Steps	Content	Details
<b>Formal method to subtract (exchange)</b>			
Subtraction up to 2-digits (with decomposing)	1	Using a formal written algorithm to record subtraction calculations involving up to two-digit numbers (with decomposing)	<ul style="list-style-type: none"> <li>• apply algorithms to solve problems with trading (decomposing) in one or more places, with the same number of places for both numbers, with fewer places in the second number (subtrahend) and with and without one or more zeros in the first number (minuend); include opportunities for students to write their own algorithms with digits in correct place value positions and with the larger number first; include word problems</li> </ul>
			<ul style="list-style-type: none"> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>
Subtraction up to 3-digits (with decomposing)	1	Using a formal written algorithm to record subtraction calculations involving up to three-digit numbers (with decomposing)	<ul style="list-style-type: none"> <li>• 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</li> </ul>
			<ul style="list-style-type: none"> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>
Subtraction up to 4-digits (with decomposing)	1	Using a formal written algorithm to record subtraction calculations involving up to four-digit numbers (with decomposing)	<ul style="list-style-type: none"> <li>• 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</li> </ul>
	2	Using a formal written algorithm for subtraction calculations for two 4-digit numbers (with one exchange)	<ul style="list-style-type: none"> <li>• apply algorithms to solve problems with one exchange, with the same number of places and with a different number of places. Use models to support calculation, eg place value model, place value grid, bar model</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>

Learning Journey	Steps	Content	Details
Subtraction up to 5-digits (with decomposing)	1	Using a formal written algorithm to record subtraction calculations involving up to five-digit numbers (with decomposing)	<ul style="list-style-type: none"><li>• 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</li></ul>
			<ul style="list-style-type: none"><li>• use estimation or reverse operation to check the reasonableness of solutions</li></ul>
Efficient addition strategies			
Efficient mental strategies for addition	1	Choosing efficient mental addition strategies with numbers up to five digits	<ul style="list-style-type: none"><li>• apply place value and partitioning to rearrange and regroup numbers to assist with calculations, eg use rounding and compensating, bar model, jump strategies, split strategies, place value strategies or bridging strategies</li></ul>
			<ul style="list-style-type: none"><li>• use a range of recording methods to solve addition problems, eg number sentences, empty number line, regrouping</li></ul>
Word problems using efficient addition strategies	1	Solving one-step word problems using efficient mental addition strategies with numbers up to five digits	<ul style="list-style-type: none"><li>• solve addition word problems using mental strategies</li></ul>
Efficient subtraction strategies			
Efficient mental strategies for subtraction	1	Choosing efficient mental subtraction strategies with numbers up to five digits	<ul style="list-style-type: none"><li>• apply place value and partitioning to rearrange and regroup numbers to assist with calculations, eg use rounding and compensating, jump strategies, split strategies, place value strategies or bridging strategies</li></ul>
			<ul style="list-style-type: none"><li>• use a range of recording methods to solve subtraction problems, eg number sentences, empty number line, regrouping</li></ul>
Subtract 3-digit numbers using models	1	Subtracting 2 three-digit numbers using efficient methods with no exchange	<ul style="list-style-type: none"><li>• subtract 2 three-digit numbers using bar models and number lines</li></ul>
			<ul style="list-style-type: none"><li>• subtract 2 three-digit numbers using base 10 representation</li></ul>
			<ul style="list-style-type: none"><li>• subtract 2 three-digit numbers using column method</li></ul>
	2	Subtracting 2 three-digit numbers using efficient methods with no exchange (column method)	<ul style="list-style-type: none"><li>• subtract 2 three-digit numbers using column method using visual representation of calculation, eg place value, bar model, number line</li></ul>

Learning Journey	Steps	Content	Details
Subtract 4-digit numbers using place value	1	Subtracting a 4-digit number from a 4-digit number using place value partitioning and efficient methods	<ul style="list-style-type: none"> <li>• subtract a 4-digit number from a 4-digit number using the bar model method</li> <li>• subtract a 4-digit number from a 4-digit number using a part-whole model</li> <li>• subtract a 4-digit number from a 4-digit number using a number line</li> </ul>
Word problems - efficient subtraction strategies	1	Solving word problems using efficient mental subtraction strategies with numbers up to five digits	<ul style="list-style-type: none"> <li>• solve subtraction word problems using mental strategies</li> </ul>
<b>Check accuracy of addition &amp; subtraction</b>			
Checking strategies	1	Checking accuracy of addition and subtraction calculations up to two 4-digit numbers	<ul style="list-style-type: none"> <li>• use estimation to check the reasonableness of answers to addition and subtraction calculations</li> </ul>
<b>Estimating additions and subtractions</b>			
Estimate additions	1	Estimating additions to the nearest 1000	<ul style="list-style-type: none"> <li>• round numbers to the nearest multiple of 1000 to estimate additions, eg <math>3546 + 2789</math> as <math>4000 + 3000</math> (with models)</li> </ul>
Estimate subtractions	1	Estimating subtractions to the nearest 1000	<ul style="list-style-type: none"> <li>• round numbers to the nearest multiple of 1000 to estimate additions, eg <math>3812 + 1489</math> as <math>4000 + 1000</math> (with models)</li> </ul>
<b>Addition and subtraction with multiples</b>			
Adding multiples of 10	1	Adding a multiple of 10 to a 3-digit number with an exchange	<ul style="list-style-type: none"> <li>• add a multiple of 10 to a 3-digit number not crossing the 100, using models and tables, eg, <math>269 + 40 = ?</math></li> </ul>
Adding and subtracting multiples of 1000	1	Adding and subtracting multiples of 1000	<ul style="list-style-type: none"> <li>• add multiples of 1000</li> <li>• subtract multiples of 1000</li> </ul>
<b>Comparing number sentences</b>			
Comparing number sentences	1	Comparing 3-digit and 2-digit number sentences (not crossing 100) using inequality symbols	<ul style="list-style-type: none"> <li>• compare number sentences using inequality symbols with addition, eg, <math>773 + 1</math> [<math>&lt;</math>, <math>&gt;</math>, <math>=</math>] <math>773 + 10</math></li> <li>• compare number sentences using inequality symbols with subtraction eg <math>773 - 1</math> [<math>&lt;</math>, <math>&gt;</math>, <math>=</math>] <math>773 - 10</math></li> <li>• compare number sentences using inequality symbols with subtraction and addition eg <math>773 - 1</math> [<math>&lt;</math>, <math>&gt;</math>, <math>=</math>] <math>773 + 10</math></li> </ul>
<b>2-step problems</b>			
2-step problems (addition and subtraction)	1	Solving addition and subtraction two-step problems in context (max sum 1000)	<ul style="list-style-type: none"> <li>• read and interpret a word problem</li> <li>• decide which operations and strategies to use and explain why</li> <li>• solve an addition and subtraction two-step problem</li> </ul>



Learning Journey	Steps	Content	Details
Patterns in addition			
Generating addition patterns from a given rule	1	Generating addition patterns from a given rule	<ul style="list-style-type: none"><li>• 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'</li></ul>
			<ul style="list-style-type: none"><li>• extend and create a shape pattern that follows an addition rule, eg a growing pattern of triangles made using matchsticks</li></ul>
			<ul style="list-style-type: none"><li>• identify apparent features of that pattern that were not explicit in the rule</li></ul>
Patterns in subtraction			
Generating subtraction patterns from a given rule	1	Generating subtraction patterns from a given rule	<ul style="list-style-type: none"><li>• 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'</li></ul>
			<ul style="list-style-type: none"><li>• extend and create a shape pattern that follows a subtraction rule, eg a decreasing pattern of triangles made using matchsticks</li></ul>
			<ul style="list-style-type: none"><li>• identify apparent features of that pattern that were not explicit in the rule</li></ul>
Patterns in addition and subtraction			
Describing patterns	1	Describing patterns resulting from addition and subtraction involving at least one 3-digit number	<ul style="list-style-type: none"><li>• describe patterns resulting from addition involving at least one 3-digit number, eg, explain what has happened to the starting number <math>240 + ? = 377</math></li></ul>
			<ul style="list-style-type: none"><li>• describe patterns resulting from subtraction involving at least one 3-digit number eg explain what has happened to the starting number</li></ul>
Inverse operations			
Finding unknown quantities	1	Using inverse operations to complete addition and/or subtraction number sentences (2-digit numbers)	<ul style="list-style-type: none"><li>• complete number sentences involving addition and subtraction by calculating missing numbers, eg find the missing numbers: <math>? + 55 = 83</math>, <math>? - 15 = 19</math></li></ul>
			<ul style="list-style-type: none"><li>• use inverse operations to complete number sentences</li><li>• justify solutions when completing number sentences</li></ul>
	2	Finding missing numbers where there are addition and/or subtraction operations on both sides of the equals sign	<ul style="list-style-type: none"><li>• find the missing number in a number sentence involving operations of addition or subtraction on both sides of the equals sign, eg <math>8 + ? = 6 + 7</math></li></ul>

Multiplication and division			
Skip counting by 50 and 25			
Learning Journey	Steps	Content	Details
Skip counting by 50s	1	Counting by skip counting forwards by 50s from any multiple of 50 up to 500	• use concrete materials, models, drawings, number lines/charts to skip count by 50s from any multiple of 50
			• use knowledge of the number sequence to count in 50s from any multiple of 50
			• recognise an error in the skip counting sequence
	2	Counting by skip counting backwards by 50s from any multiple of 50 from 500	• use concrete materials, models, drawings, number lines/charts to skip count backwards by 50s
			• use knowledge of the number sequence to count backwards in 50s from any multiple of 50
			• recognise an error in the skip counting sequence
	3	Counting by skip counting forwards or backwards by 50s from any multiple of 50 from zero to 500	• use concrete materials, models, drawings, number lines/charts to skip count by 50s
			• use knowledge of the number sequence to count forwards or backwards in 50s from any multiple of 50
			• recognise an error in the skip counting sequence
Skip counting by 25s	1	Counting by skip counting forwards by 25s from any multiple of 25 up to 10 000	• use concrete materials, models, drawings, number lines/charts to skip count by 25s from any multiple of 25
			• use knowledge of the number sequence to count in 25s from any multiple of 25
			• recognise an error in the skip counting sequence
	2	Counting by skip counting backwards by 25s from any multiple of 25 from 10 000	• use concrete materials, models, drawings, number lines/charts to skip count backwards by 25s
			• use knowledge of the number sequence to count backwards in 25s from any multiple of 25
			• recognise an error in the skip counting sequence
	3	Counting by skip counting forwards or backwards by 25s from any multiple of 25 from zero to 10 000	• use concrete materials, models, drawings, number lines/charts to skip count by 25s
			• use knowledge of the number sequence to count forwards or backwards in 25s from any multiple of 25
			• recognise an error in the skip counting sequence

Learning Journey	Steps	Content	Details
<b>Count in multiples of 6, 7, 9, 25 &amp; 1000</b>			
Count in multiples of 6, 7, 9, 25 and 1000	1	Counting in multiples of 6, 7, 9, 25 and 1000	<ul style="list-style-type: none"> <li>count in multiples of 6, 7, 9, 25 and 1000</li> </ul>
<b>Multiplication facts for 6 (up to 10x)</b>			
Exploring multiplication by 6 (x10)	1	Exploring multiplication by 6 up to 60	<ul style="list-style-type: none"> <li>use concrete materials, models, drawings, number lines/charts to skip count by 6 from zero; explore patterns of the multiplication facts for 6 on a number chart</li> <li>relate multiplication by 6 to double multiplication by 3</li> </ul>
Recalling multiplication facts (x6)	1	Recalling multiplication facts for 6	<ul style="list-style-type: none"> <li>recall the multiplication facts for 6</li> </ul>
Recalling and using multiplication facts for 6	1	Recalling and using multiplication facts for 6 (up to 60)	<ul style="list-style-type: none"> <li>recall the multiplication facts for 6</li> <li>solve multiplication problems with 6 including word problems</li> </ul>
<b>Multiplication facts for 7 (up to 10x)</b>			
Recalling multiplication facts (x7)	1	Recalling multiplication facts for 7	<ul style="list-style-type: none"> <li>recall the multiplication facts for 7</li> </ul>
Recalling and using multiplication facts for 7	1	Recalling and using multiplication facts for 7 (up to 70)	<ul style="list-style-type: none"> <li>recall the multiplication facts for 7</li> <li>solve multiplication problems with 7 including word problems</li> </ul>
<b>Multiplication facts for 8 (up to 10x)</b>			
Recalling multiplication facts (x8)	1	Recalling multiplication facts for 8	<ul style="list-style-type: none"> <li>recall the multiplication facts for 8</li> </ul>
Recalling and using multiplication facts for 8	1	Recalling and using multiplication facts for 8 (up to 80)	<ul style="list-style-type: none"> <li>recall the multiplication facts for 8</li> <li>solve multiplication problems with 8 including word problems</li> </ul>
<b>Multiplication facts for 9 (up to 10x)</b>			
Recalling multiplication facts (x9)	1	Recalling multiplication facts for 9	<ul style="list-style-type: none"> <li>recall the multiplication facts for 9</li> </ul>
Recalling and using multiplication facts for 9	1	Recalling and using multiplication facts for 9 (up to 90)	<ul style="list-style-type: none"> <li>recall the multiplication facts for 9</li> <li>solve multiplication problems with 9 including word problems</li> </ul>
<b>Recalling multiplication facts (10 x 10)</b>			
Recalling multiplication facts up to 10 x 10	1	Recalling multiplication facts up to 10 x 10 with automaticity	<ul style="list-style-type: none"> <li>recall facts in order</li> <li>recall facts in random order</li> <li>create a table or simple spreadsheet to record multiplication facts</li> </ul>
<b>Multiplication facts for 6 (up to 12x)</b>			
Exploring multiplication by 6 (x12)	1	Exploring multiplication by 6 up to 72	<ul style="list-style-type: none"> <li>use concrete materials, models, drawings, number lines/charts to skip count by 6 from zero; explore patterns of the multiplication facts for 6 on a number chart</li> <li>relate multiplication by 6 to double multiplication by 3</li> </ul>
Recalling multiplication facts for 6 (x12)	1	Recalling and using multiplication facts for 6 (up to 72)	<ul style="list-style-type: none"> <li>recall the multiplication facts for 6</li> <li>solve multiplication problems with 6 including word problems</li> </ul>

Learning Journey	Steps	Content	Details
<b>Multiplication facts for 7 (up to 12x)</b>			
Exploring multiplication by 7 (x12)	1	Exploring multiplication by 7 up to 84	<ul style="list-style-type: none"> <li>• 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</li> </ul>
Recalling multiplication facts for 7 (x12)	1	Recalling and using multiplication facts for 7 (up to 84)	<ul style="list-style-type: none"> <li>• recall the multiplication facts for 7</li> <li>• solve multiplication problems with 7, including word problems</li> </ul>
<b>Multiplication facts for 8 (up to 12x)</b>			
Exploring multiplication by 8 (x12)	1	Exploring multiplication by 8 up to 96	<ul style="list-style-type: none"> <li>• 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</li> <li>• relate multiplication by 8 to double multiplication by 4</li> </ul>
Recalling multiplication facts for 8 (x12)	1	Recalling and using multiplication facts for 8 (up to 96)	<ul style="list-style-type: none"> <li>• recall the multiplication facts for 8</li> <li>• solve multiplication problems with 8 including word problems</li> </ul>
<b>Multiplication facts for 9 (up to 12x)</b>			
Recalling multiplication facts for 9 (x12)	1	Recalling and using multiplication facts for 9 (up to 108)	<ul style="list-style-type: none"> <li>• recall the multiplication facts for 9</li> <li>• solve multiplication problems with 9, including word problems</li> </ul>
Exploring multiplication by 9 (x12)	1	Exploring multiplication by 9 up to 108	<ul style="list-style-type: none"> <li>• 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</li> <li>• relate multiplication by 9 to multiplication by 10 (multiply by 10 and then subtract the extra group)</li> </ul>
<b>Multiplication facts for 11 (up to 12x)</b>			
Multiplying by 11 (x12)	1	Multiplying by 11 (up to 12x)	<ul style="list-style-type: none"> <li>• recall the multiplication facts for 11</li> </ul>
<b>Multiplication facts for 12 (up to 12x)</b>			
Multiplying by 12 (x12)	1	Multiplying by 12 (up to 12x)	<ul style="list-style-type: none"> <li>• recall the multiplication facts for 12</li> </ul>
<b>Dividing by 6 (within 10 times tables)</b>			
Recalling division facts for 6	1	Recalling division facts for 6	<ul style="list-style-type: none"> <li>• recall the division facts for 6</li> </ul>
Recalling and using division facts for 6 (x10)	1	Recalling and using division facts for 6 up to 60	<ul style="list-style-type: none"> <li>• recall the division facts for 6</li> <li>• solve division problems with 6 including word problems</li> </ul>
<b>Dividing by 7 (within 10 times tables)</b>			
Recalling division facts for 7	1	Recalling division facts for 7	<ul style="list-style-type: none"> <li>• recall the division facts for 7</li> </ul>
Recalling and using division facts for 7 (x10)	1	Recalling and using division facts for 7 up to 70	<ul style="list-style-type: none"> <li>• recall the division facts for 7</li> <li>• solve division problems with 7 including word problems</li> </ul>
<b>Dividing by 8 (within 10 times tables)</b>			
Recalling division facts for 8	1	Recalling division facts for 8	<ul style="list-style-type: none"> <li>• recall the division facts for 8</li> </ul>

Learning Journey	Steps	Content	Details
Recalling and using division facts for 8 (x10)	1	Recalling and using division facts for 8 up to 80	<ul style="list-style-type: none"> <li>• recall the division facts for 8</li> <li>• solve division problems with 8 including word problems</li> </ul>
<b>Dividing by 9 (within 10 times tables)</b>			
Recalling division facts for 9	1	Recalling division facts for 9	<ul style="list-style-type: none"> <li>• recall the division facts for 9</li> </ul>
Recalling and using division facts for 9 (x10)	1	Recalling and using division facts for 9 up to 90	<ul style="list-style-type: none"> <li>• recall the division facts for 9</li> <li>• solve division problems with 9 including word problems</li> </ul>
<b>Dividing by 6 (within 12 times tables)</b>			
Dividing by 6	1	Dividing by 6 up to 72	<ul style="list-style-type: none"> <li>• model and describe the related multiplication and division facts for 6 using models, drawings or manipulatives, eg <math>6 \times 3 = 18</math> and 18 divided by 3 = 6</li> <li>• relate division to how many (whole) times the divisor goes into the dividend</li> </ul>
Recalling and using division facts for 6 (x12)	1	Recalling and using division facts for 6 up to 72	<ul style="list-style-type: none"> <li>• recall the division facts for 6</li> <li>• solve division problems with 6 including word problems</li> </ul>
<b>Dividing by 7 (within 12 times tables)</b>			
Dividing by 7	1	Dividing by 7 up to 84	<ul style="list-style-type: none"> <li>• model and describe the related multiplication and division facts for 7 using models, drawings or manipulatives, eg <math>7 \times 3 = 21</math> and 21 divided by 3 = 7</li> <li>• relate division to how many (whole) times the divisor goes into the dividend</li> </ul>
Recalling and using division facts for 7 (x12)	1	Recalling and using division facts for 7 up to 84	<ul style="list-style-type: none"> <li>• recall the division facts for 7</li> <li>• solve division problems with 7, including word problems</li> </ul>
<b>Dividing by 8 (within 12 times tables)</b>			
Dividing by 8	1	Dividing by 8 up to 96	<ul style="list-style-type: none"> <li>• model and describe the related multiplication and division facts for 8 using models, drawings or manipulatives, eg <math>8 \times 3 = 24</math> and 24 divided by 3 = 8</li> <li>• relate division to how many (whole) times the divisor goes into the dividend</li> </ul>
Recalling and using division facts for 8 (x12)	1	Recalling and using division facts for 8 up to 96	<ul style="list-style-type: none"> <li>• recall the division facts for 8</li> <li>• solve division problems with 8 including word problems</li> </ul>
<b>Dividing by 9 (within 12 times tables)</b>			
Dividing by 9	1	Dividing by 9 up to 108	<ul style="list-style-type: none"> <li>• model and describe the related multiplication and division facts for 9 using models, drawings or manipulatives, eg <math>9 \times 3 = 27</math> and 27 divided by 3 = 9</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• relate division to how many (whole) times the divisor goes into the dividend</li> </ul>
Recalling and using division facts for 9 (x12)	1	Recalling and using division facts for 9 up to 108	<ul style="list-style-type: none"> <li>• recall the division facts for 9</li> <li>• solve division problems with 9, including word problems</li> </ul>
<b>Dividing by 11 (within 12 times tables)</b>			
Dividing by 11	1	Dividing by 11	<ul style="list-style-type: none"> <li>• recall the division facts for 11</li> <li>• solve division problems with 11, including word problems</li> </ul>
<b>Dividing by 12 (within 12 times tables)</b>			
Dividing by 12	1	Dividing by 12	<ul style="list-style-type: none"> <li>• recall the division facts for 12</li> <li>• solve division problems with 12, including word problems</li> </ul>
<b>Multiplying and dividing (x10)</b>			
Multiplying and dividing by 6 (x10)	1	Multiplying and dividing by 6 up to 60	<ul style="list-style-type: none"> <li>• recall the multiplication facts and related division facts for 6</li> <li>• solve multiplication and division problems with 6, including word problems</li> </ul>
Multiplying and dividing by 7 (x10)	1	Multiplying and dividing by 7 up to 70	<ul style="list-style-type: none"> <li>• recall the multiplication facts and related division facts for 7</li> <li>• solve multiplication and division problems with 7, including word problems</li> </ul>
Multiplying and dividing by 8 (x10)	1	Multiplying and dividing by 8 up to 80	<ul style="list-style-type: none"> <li>• recall the multiplication facts and related division facts for 8</li> <li>• solve multiplication and division problems with 8, including word problems</li> </ul>
Multiplying and dividing by 9 (x10)	1	Multiplying and dividing by 9 up to 90	<ul style="list-style-type: none"> <li>• recall the multiplication facts and related division facts for 9</li> <li>• solve multiplication and division problems with 9, including word problems</li> </ul>
<b>Multiplying and dividing (x12)</b>			
Multiplying and dividing by 6 (x12)	1	Multiplying and dividing by 6 up to 72	<ul style="list-style-type: none"> <li>• recall the multiplication facts and related division facts for 6</li> <li>• solve multiplication and division problems with 6, including word problems</li> </ul>
Multiplying and dividing by 7 (x12)	1	Multiplying and dividing by 7 up to 84	<ul style="list-style-type: none"> <li>• recall the multiplication facts and related division facts for 7</li> <li>• solve multiplication and division problems with 7, including word problems</li> </ul>
Multiplying and dividing by 8 (x12)	1	Multiplying and dividing by 8 up to 96	<ul style="list-style-type: none"> <li>• recall the multiplication facts and related division facts for 8</li> <li>• solve multiplication and division problems with 8, including word problems</li> </ul>

Learning Journey	Steps	Content	Details
Multiplying and dividing by 9 (x12)	1	Multiplying and dividing by 9 up to 108	<ul style="list-style-type: none"> <li>recall the multiplication facts and related division facts for 9</li> <li>solve multiplication and division problems with 9, including word problems</li> </ul>
Multiplying and dividing by 11 (x12)	1	Multiplying and dividing by 11	<ul style="list-style-type: none"> <li>recall the multiplication facts and related division facts for 11</li> <li>solve multiplication and division problems with 11, including word problems</li> </ul>
Multiplying and dividing by 12 (x12)	1	Multiplying and dividing by 12	<ul style="list-style-type: none"> <li>recall the multiplication facts and related division facts for 12</li> <li>solve multiplication and division problems with 12, including word problems</li> </ul>
<b>Commutative multiplication (x10)</b>			
Commutative law of multiplication (x10)	1	Using the commutative law of multiplication up to $10 \times 10$	<ul style="list-style-type: none"> <li>use the commutative law of multiplication, eg <math>7 \times 9 = 9 \times 7</math></li> </ul>
<b>Associative multiplication (x10)</b>			
Associative law of multiplication (x10)	1	Using the associative law of multiplication up to $10 \times 10$	<ul style="list-style-type: none"> <li>use the associative law of multiplication up to <math>10 \times 10</math></li> </ul>
<b>Distributive multiplication (x10)</b>			
Distributive law of multiplication (x10)	1	Using the distributive law up to $10 \times 10$	<ul style="list-style-type: none"> <li>use the distributive law up to <math>10 \times 10</math></li> </ul>
<b>Commutative multiplication (x12)</b>			
Commutative law of multiplication (x12)	1	Using the commutative law of multiplication up to $12 \times 12$	<ul style="list-style-type: none"> <li>use the commutative law of multiplication, eg <math>7 \times 12 = 12 \times 7</math></li> </ul>
<b>Commutative &amp; associative multiplication</b>			
Commutative and associative multiplication	1	Multiplying 3 or more single-digit numbers using the commutative and associative laws	<ul style="list-style-type: none"> <li>apply the commutative law of multiplication</li> <li>explore and apply the associative law of multiplication, eg <math>2 \times 3 \times 5 = 2 \times 5 \times 3 = 10 \times 3 = 30</math></li> </ul>
<b>Multiplication: 1-digit by 1-digit</b>			
1-digit by 1-digit: Rounding and compensating	1	Representing and multiplying two 1-digit numbers using rounding and compensating	<ul style="list-style-type: none"> <li>represent with models/diagrams and use known facts to solve multiplication problems by adding on or taking off, eg <math>5 \times 10</math> is 50, so <math>5 \times 9</math> is 5 less, which is 45</li> <li>explain and justify the use of the strategy</li> </ul>
1-digit by 1-digit: Doubling and related facts	1	Representing and multiplying two 1-digit numbers using doubling and related facts	<ul style="list-style-type: none"> <li>represent with models/diagrams and use the relationship between multiplication facts, eg the multiplication facts for 6 are double the multiplication facts for 3</li> <li>explain and justify the use of the strategy</li> </ul>

Learning Journey	Steps	Content	Details
1-digit by 1-digit: Repeated doubling	1	Representing and multiplying two 1-digit numbers using repeated doubling	<ul style="list-style-type: none"><li>represent with models/diagrams and use doubling and repeated doubling as a strategy to multiply by 2, 4 and 8, eg <math>7 \times 8</math> is double 7, double again and then double again</li></ul>
			<ul style="list-style-type: none"><li>explain and justify the use of the strategy</li></ul>
1-digit by 1-digit: Factoring	1	Representing and multiplying two 1-digit numbers using factorising	<ul style="list-style-type: none"><li>represent with models/diagrams and split factors, eg <math>5 \times 8</math> is the same as <math>5 \times 2 \times 4</math>, which becomes <math>10 \times 4</math></li></ul>
			<ul style="list-style-type: none"><li>explain and justify the use of the strategy</li></ul>
Multiplication: 2-digit by 1-digit			
2-digits by 1-digit: place value understanding	1	Representing and multiplying a 2-digit number by a 1-digit number using place value understanding and the distributive law	<ul style="list-style-type: none"><li>represent and use place value to solve a multiplication fact, eg multiplying the tens and then the units, eg <math>7 \times 19</math>: 7 tens + 7 nines is <math>70 + 63</math>, which is 133</li></ul>
			<ul style="list-style-type: none"><li>explain and justify the use of the strategy</li></ul>
2-digits by 1-digit: area model	1	Multiplying a 2-digit number by a 1-digit number using an area model	<ul style="list-style-type: none"><li>use area model to solve multiplication problems</li></ul>
			<ul style="list-style-type: none"><li>explain and justify the use of the strategy</li></ul>
2-digits by 1-digit: Doubling and related facts	1	Representing and multiplying a 2-digit number by a 1-digit number using doubling and related facts	<ul style="list-style-type: none"><li>represent and use doubling to multiply a 2-digit and 1-digit number, eg <math>41 \times 6</math> is <math>41 \times 3</math>, which is 123, and then double to obtain 246</li></ul>
			<ul style="list-style-type: none"><li>explain and justify the use of the strategy</li></ul>
	2	Representing and multiplying a 2-digit number by a 2, 4 or 8 using doubling and repeated doubling	<ul style="list-style-type: none"><li>represent and use repeated doubling as a strategy to multiply, eg <math>23 \times 2</math> is double 23, <math>23 \times 4</math> is double 23 and double again, <math>23 \times 8</math> is double 23, double again and double again</li></ul>
			<ul style="list-style-type: none"><li>explain and justify the use of the strategy</li></ul>
2-digits by 1-digit: Factoring	1	Representing and multiplying a 2-digit number by a 1-digit number using factorising (the associative law)	<ul style="list-style-type: none"><li>represent and use factorising (factorise the larger number), eg <math>18 \times 4 = 9 \times 2 \times 4 = 9 \times 8 = 72</math></li></ul>
			<ul style="list-style-type: none"><li>explain and justify the use of the strategy</li></ul>
2-digits by 1-digit: Columnar multiplication	1	Multiplying 2-digit numbers by 1-digit numbers using the contracted algorithm (no regrouping)	<ul style="list-style-type: none"><li>multiply the ones, then the tens, without regrouping</li></ul>
	2	Multiplying 2-digit numbers by 1-digit numbers using the columnar contracted algorithm (2, 3, 4, 5, 8) no regrouping	<ul style="list-style-type: none"><li>multiply 2-digit numbers by 1-digit numbers using the columnar contracted algorithm (2, 3, 4, 5, 8) no regrouping, eg multiply the ones, then the tens</li></ul>
	3	Multiplying 2-digit numbers by 1-digit numbers using the contracted algorithm (with regrouping)	<ul style="list-style-type: none"><li>multiply 2-digit numbers by 1-digit numbers using the contracted algorithm (with regrouping)</li></ul>



Learning Journey	Steps	Content	Details
Multiply/divide with multiples			
Mult/div problems with multiples of 10 and 100	1	Representing and using known facts to solve multiplication and division problems with multiples of 10 and 100	• represent with models/diagrams and use known facts and place value understanding to solve multiplication problems with multiples of 10 or 100, eg $3 \times 6 = 18$ so $3 \times 600 = 1800$
			• use known facts and place value understanding to solve division problems with multiples of 10 or 100, eg $18 \div 6 = 3$ so $1800 \div 600 = 3$
			• explain and justify the use of the strategy
Multiply 2-digit multiples of 100	1	Representing and using known facts to multiply 2 multiples of 100	• represent with models/diagrams and use known facts and place value understanding to multiply 2 multiples of 100, eg $300 \times 400 = 3 \times 4 = 12$ so $300 \times 400 = 1200$
			• know that multiplying by 100 shifts the digits 2 places to the left
Multiply 2-digit numbers by 100	1	Representing and using known facts to multiply 2-digit numbers by 100	• represent with models/diagrams and use known facts and place value understanding to multiply 2-digit numbers by 100, eg $13 \times 100 = 10 \times 100 + 3 \times 100$
			• know that multiplying by 100 shifts the digits 2 places to the left
Divide:2-digit by 1-digit (no remainder)			
Inverse relationship multiplication and division	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 $63 \div 9 = 7$ because $7 \times 9 = 63$
Halving and repeated halving (no remainders)	1	Multiplying and dividing by 12	• recall the multiplication facts and related division facts for 12
			• solve multiplication and division problems with 12, including word problems
Related facts (no remainders)	1	Using the commutative law of multiplication up to $12 \times 12$	• use the commutative law of multiplication, eg $7 \times 12 = 12 \times 7$
Dividing a 2-digit by a 1-digit number (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
	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
Introducing remainders in division			
Introducing remainders in division	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

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"><li>• use mental strategies to divide a 2-digit number by a 1-digit number in problems for which answers include a remainder</li></ul>
			<ul style="list-style-type: none"><li>• record remainders to division problems in words</li></ul>
			<ul style="list-style-type: none"><li>• interpret the remainder in the context of a word problem</li></ul>
	2	Dividing 2-digit numbers by a 1-digit number by partitioning (with remainders)	<ul style="list-style-type: none"><li>• divide 2-digit numbers by a 1-digit number using partitioning and number lines, place value grids, part-whole models etc</li></ul>
Effective multiplication strategies			
Effective multiplication strategies	1	Selecting efficient strategies to solve multiplication problems	<ul style="list-style-type: none"><li>• select and use a variety of mental and informal written strategies to solve multiplication problems</li></ul>
Effective division strategies			
Efficient division strategies	1	Selecting efficient strategies to solve division problems	<ul style="list-style-type: none"><li>• select and use a variety of mental and informal written strategies to solve division problems</li></ul>
			<ul style="list-style-type: none"><li>• apply the inverse relationship of multiplication and division to justify answers</li></ul>
			<ul style="list-style-type: none"><li>• check the answer to a word problem using digital technologies</li></ul>
			<ul style="list-style-type: none"><li>• record mental strategies accurately</li></ul>
Division: 3-digit by 10 (no remainder)			
Dividing 3-digit numbers by 10	1	Representing and using known facts to divide 3-digit numbers by 10	<ul style="list-style-type: none"><li>• represent with models/diagrams and use known facts and place value understanding to divide 2-digit numbers by 10, eg <math>460 \div 10 = 46</math></li></ul>
			<ul style="list-style-type: none"><li>• know that dividing by 10 shifts the digits 1 place to the right</li></ul>
Factors, multiples and prime numbers			
Multiples up to 100	1	Introducing multiples up to 100	<ul style="list-style-type: none"><li>• find 'multiples' for a given whole number</li></ul>
Factors up to 100	1	Introducing factors for numbers up to 100	<ul style="list-style-type: none"><li>• determine 'factors' for a given whole number</li></ul>
			<ul style="list-style-type: none"><li>• connect number relationships involving multiplication to factors of a number</li></ul>
Multiplication patterns			
Exploring number patterns	1	Investigating number sequences involving multiples of 3, 4, 6, 7, 8 and 9	<ul style="list-style-type: none"><li>• generate number patterns using multiples of 3, 4, 6, 7, 8 and 9</li></ul>
			<ul style="list-style-type: none"><li>• investigate visual number patterns on a number chart</li></ul>
			<ul style="list-style-type: none"><li>• find missing terms in a number sequence</li></ul>
	2	Exploring number patterns resulting from performing multiplication	<ul style="list-style-type: none"><li>• 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, ...</li></ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>describe how the next term in a number pattern is calculated, eg 'Each term in the pattern is double the previous term'</li> <li>find missing terms in a number sequence</li> </ul>
Generating multiplication patterns from rules	1	Generating multiplication patterns from a given rule	<ul style="list-style-type: none"> <li>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, ...</li> <li>identify apparent features of that pattern that were not explicit in the rule</li> </ul>
<b>Inverse facts in multiplication</b>			
Inverse facts in multiplication	1	Using inverse facts	<ul style="list-style-type: none"> <li>relate multiplication facts to their inverse division facts</li> <li>relate division facts to their inverse multiplication facts</li> </ul>
<b>Equality in products</b>			
Finding equality in products	1	Using the conventions of multiplication number sentences	<ul style="list-style-type: none"> <li>use the term 'product' to describe the result of multiplying 2 or more numbers</li> <li>use the equals sign to record equivalent number relationships involving multiplication, and to mean 'is the same as', rather than to mean to perform an operation</li> </ul>
<b>Problem solving: multiplication/division</b>			
One-step multiplication and division word problems	1	Expressing given one-step word problems as a multiplication or division number sentences and solving	<ul style="list-style-type: none"> <li>represent and solve multiplication and division word problems (up to <math>10 \times 10</math> multiplication and division facts) using number sentences with a symbol for the unknown, eg 'Anne spent \$28 dollars on tickets to a show for her friends. If 7 friends are coming to the show, what was the cost of each ticket?'</li> <li>discuss whether it is more appropriate to represent the problem using <math>\times</math> or <math>\div</math> in order to calculate the solution</li> </ul>
Multi-step multiplication/division word problems	1	Solving two-step multiplication and/or division word problems, including correspondence problems	<ul style="list-style-type: none"> <li>solve two-step word problems in context involving multiplication and division; choose the appropriate operation</li> </ul>
	2	Solving multi-step multiplication and/or division word problems	<ul style="list-style-type: none"> <li>solve multi-step word problems involving multiplication and division</li> <li>represent unknown with a letter</li> </ul>
Place value and related calculations	1	Using place value and related calculations to solve multiplication problems	<ul style="list-style-type: none"> <li>use place value and related calculations to solve problems, eg, <math>6 \times 2 = 12</math>, <math>60 \times 2 = 120</math>. Because one number is ten times bigger, the answer will be ten times bigger</li> </ul>

Learning Journey	Steps	Content	Details
<b>Comparisons with multiplication</b>			
Describe comparisons using multiplication language	1	Describing comparisons using the language of multiplication	<ul style="list-style-type: none"> <li>describe comparisons using the language of multiplication, eg <math>35 = 5 \times 7</math> as 35 is 5 times as many as 7 and 7 times as many as 5</li> </ul>
Solving word problems involving comparisons	1	Solving word problems involving comparisons	<ul style="list-style-type: none"> <li>solve word problems involving comparisons</li> </ul>

Money			
Money (AUS)			
Learning Journey	Steps	Content	Details
Money: dollars and cents	1	Using decimals to represent money	• recognise that 1 cent is one-hundredth of a dollar and connect decimal notation to money values in dollars and cents
			• calculate the total value of a group of notes and coins and record this value using decimal notation and the symbol \$
			• combine amounts of notes and coins to make a given amount of money in decimal notation
			• use the symbols \$ and c correctly when recording amounts of money
Money (US)			
Addition and subtraction with money (US)	1	Using money: Addition and subtraction problems   United States	• 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 \$
Money (UK)			
Addition and subtraction with money (UK)	1	Using money: Addition and subtraction problems   United Kingdom	• 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 £

<b>Fractions</b>			
<b>Counting in fractions</b>			
Learning Journey	Steps	Content	Details
Counting fractions on a number line	1	Counting in fractions on a number line (denominators up to 12)	<ul style="list-style-type: none"> <li>count in proper and improper fractions (starting on any fraction) using number lines and models, eg, <math>\frac{7}{8}</math>, <math>\frac{8}{8}</math>, <math>\frac{9}{8}</math>, <math>\frac{10}{8}</math></li> </ul>
			<ul style="list-style-type: none"> <li>create sequences of fractions following the pattern provided</li> </ul>

Learning Journey	Steps	Content	Details
<b>Equivalent fractions to 1 whole</b>			
Equivalent fractions up to 1 whole	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)	<ul style="list-style-type: none"> <li>model, compare and represent the equivalence of fractions with related denominators by redividing the whole, using identical area models, fraction walls and bar models</li> </ul>
	2	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)	<ul style="list-style-type: none"> <li>model, compare and represent equivalent fractions with related denominators using a number line</li> <li>solve word problems using equivalent fractions to make comparisons, including using measurements of length, eg Which is longer, <math>\frac{1}{2}</math> a metre or <math>\frac{3}{4}</math> of a metre?</li> </ul>
	3	Investigating equivalent fractions up to and including 1 whole using multiplication (denominators of 2, 4 and 8; 3 and 6; 5, 10 and 100)	<ul style="list-style-type: none"> <li>model, compare and represent the equivalence of fractions by recognising the factorial relationship between the numerators and denominators</li> <li>create equivalent fractions using multiplication</li> </ul>
<b>Comparing and ordering fractions</b>			
Comparing and ordering fractions	1	Comparing and ordering unit fractions with different denominators using models and diagrams	<ul style="list-style-type: none"> <li>compare and order common unit fractions using models and diagrams for support</li> <li>compare and order common fractions with different denominators (halves, thirds, quarters, fifths, sixths, sevenths, eighths)</li> </ul>
	2	Comparing and ordering common fractions with different denominators using models and diagrams	<ul style="list-style-type: none"> <li>compare and order common fractions using models and diagrams for support</li> <li>compare and order common fractions with different denominators (halves, thirds, quarters, fifths, sixths, sevenths, eighths)</li> </ul>
	3	Comparing and ordering simple fractions with the same numerator up to 1	<ul style="list-style-type: none"> <li>compare simple fractions with the same numerator up to 1</li> <li>order simple fractions with the same numerator up to 1</li> </ul>
	4	Comparing fractions with the same numerator up to 1 using $>$ , $=$ , $<$ (denominators 2, 3, 4, 6, 8)	<ul style="list-style-type: none"> <li>compare fractions with the same numerator up to 1 using <math>&gt;</math>, <math>=</math>, <math>&lt;</math> (denominators 2, 3, 4, 6, 8)</li> </ul>
		Comparing fractions with the same denominator up to 1 using $>$ , $=$ , $<$ (denominators 2, 3, 4, 6, 8)	<ul style="list-style-type: none"> <li>compare fractions with the same denominator up to 1 using <math>&gt;</math>, <math>=</math>, <math>&lt;</math> (denominators 2, 3, 4, 6, 8)</li> </ul>
<b>Decomposing fractions</b>			
Decomposing fractions	1	Decomposing proper fractions and fractions equal to 1	<ul style="list-style-type: none"> <li>decompose a fraction into a sum of fractions with the same denominator in more than 1 way, eg <math>\frac{3}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}</math>; <math>\frac{3}{8} = \frac{2}{8} + \frac{1}{8}</math></li> </ul>

Learning Journey	Steps	Content	Details
		Decomposing improper fractions and fractions greater than 1	<ul style="list-style-type: none"> <li>decompose a fraction into a sum of fractions with the same denominator in more than 1 way, eg <math>4</math> and <math>3/8 = 2</math> and <math>\frac{1}{8} + 2</math> and <math>2/8</math></li> </ul>
<b>Fraction of a quantity</b>			
Finding a unit fraction of a quantity	1	Finding a unit fraction of a quantity using multiplication and division facts (denominators 2–10 and multiples of 10)	<ul style="list-style-type: none"> <li>calculate unit fractions of collections where the result is a whole number, eg calculate <math>1/5</math> of 30 as <math>5 \times ? = 30</math> or 30 divided by 5 = ?</li> <li>model and explain solutions</li> </ul>
<b>Calculating the whole quantity</b>			
Calculating the whole using models	1	Solving problems using bar models and tables to calculate the whole (including unit and non-unit proper fractions)	<ul style="list-style-type: none"> <li>calculate the whole through counting the quantity of parts (using bar models), eg, <math>\frac{1}{4} = 5</math>, <math>2/4 = 10</math>, <math>3/4 = 15</math>, <math>4/4</math> or 1 whole = 20</li> <li>calculate the whole through completing a table of whole, unit fraction and non-unit fraction, eg, the whole is 24, <math>\frac{1}{6}</math> of 24 = 4, <math>5/6</math> of 24 = 20</li> </ul>
	2	Solving word problems using proper fractions including unit and non-unit fractions (denominator less than 10)	<ul style="list-style-type: none"> <li>solve word problems using proper fractions including unit and non-unit fractions (denominator less than 10)</li> </ul>
<b>Tenths and hundredths</b>			
Counting in tenths	1	Counting in tenths	<ul style="list-style-type: none"> <li>count up in tenths using proper fractions and mixed numerals (starting from any multiple of tenths), including on a number line</li> <li>count down in tenths using proper fractions and mixed numerals (starting from any multiple of tenths), including on a number line</li> <li>represent counting in tenths using number lines and models</li> </ul>
Counting in hundredths	1	Counting in hundredths	<ul style="list-style-type: none"> <li>count up in hundredths using proper fractions and mixed numerals (starting from any multiple of tenths), including on a number line</li> <li>count down in hundredths using proper fractions and mixed numerals (starting from any multiple of tenths), including on a number line</li> <li>represent counting in hundredths using number lines and models</li> </ul>
Counting in hundredths as fractions	1	Counting in hundredths as fractions	<ul style="list-style-type: none"> <li>count up in hundredths using proper fractions (starting from any multiple of hundredth), including on a number line</li> <li>count down in hundredths using proper fractions (starting from any multiple of hundredth), including on a number line</li> </ul>

Decimals			
Introducing decimals			
Learning Journey	Steps	Content	Details
Introducing decimal notation	1	Introducing decimal notation	<ul style="list-style-type: none"> <li>• identify decimal fractions in everyday use</li> </ul>
			<ul style="list-style-type: none"> <li>• 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</li> </ul>
			<ul style="list-style-type: none"> <li>• read decimal fractions correctly, ie 'six point nine'</li> </ul>
			<ul style="list-style-type: none"> <li>• understand that any numbers after the decimal point represent part of a whole</li> </ul>
Tenths as decimals	1	Introducing decimal tenths	<ul style="list-style-type: none"> <li>• recognise that the place value system can be extended to tenths</li> </ul>
			<ul style="list-style-type: none"> <li>• represent tenths using concrete materials and written representations</li> </ul>
			<ul style="list-style-type: none"> <li>• recognise that tenths arise from dividing an object into 10 equal parts</li> </ul>
			<ul style="list-style-type: none"> <li>• recognise that tenths arise from dividing a one-digit number or quantity by 10</li> </ul>
			<ul style="list-style-type: none"> <li>• identify decimals on a number line</li> </ul>
			<ul style="list-style-type: none"> <li>• represent decimals using models and place value equipment such as base ten and arrow cards, place value grid, hundred square</li> </ul>
	2	Counting in decimal tenths	<ul style="list-style-type: none"> <li>• count forwards and backwards by tenths from any decimal number expressed to 1 decimal place, using concrete materials and number lines, eg use base ten materials to represent 3.7 and count forward: 3.8, 3.9, 4.0, 4.1, ...</li> </ul>
	3	Reading and representing tenths on a place value grid	<ul style="list-style-type: none"> <li>• read and represent tenths on a place value grid</li> </ul>
Introducing decimal hundredths	1	Introducing decimal hundredths	<ul style="list-style-type: none"> <li>• recognise that the place value system can be extended to tenths and hundredths</li> </ul>
			<ul style="list-style-type: none"> <li>• recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10</li> </ul>
			<ul style="list-style-type: none"> <li>• state the place value of digits in decimal numbers of up to 2 decimal places</li> </ul>
			<ul style="list-style-type: none"> <li>• read decimal fractions correctly, ie 'six point one nine' rather than 'six point nineteen'</li> </ul>

Learning Journey	Steps	Content	Details
	2	Counting in decimal hundredths	<ul style="list-style-type: none"> <li>count forwards and backwards by hundredths from any decimal number expressed to 2 decimal places, using concrete materials and number lines</li> </ul>
<b>Compare and order decimals</b>			
Compare and order decimal tenths	1	Comparing and ordering decimal tenths	<ul style="list-style-type: none"> <li>compare and order tenths using <math>&gt;</math>, <math>&lt;</math> and <math>=</math></li> </ul>
Compare and order decimal hundredths	1	Comparing and ordering decimal hundredths	<ul style="list-style-type: none"> <li>compare numbers with the same number of decimal places up to 2 decimal places</li> </ul>
<b>Connecting decimals and fractions</b>			
Connecting decimal & fraction tenths	1	Connecting decimal fractions to common fractions involving tenths	<ul style="list-style-type: none"> <li>understand the relationship between decimal fractions and common fractions involving tenths</li> </ul>
			<ul style="list-style-type: none"> <li>recognise and apply decimal notation to express whole numbers and tenths as decimals, eg 0.1 is the same as <math>\frac{1}{10}</math></li> </ul>
			<ul style="list-style-type: none"> <li>investigate equivalences using various methods, eg use a number line or a calculator to show that <math>\frac{1}{2}</math> is the same as 0.5 and <math>\frac{5}{10}</math></li> </ul>
Connecting decimal & fraction hundredths	1	Connecting decimal fractions to common fractions involving hundredths	<ul style="list-style-type: none"> <li>understand the relationship between decimal fractions and common fractions involving hundredths</li> </ul>
			<ul style="list-style-type: none"> <li>recognise and apply decimal notation to express whole numbers and hundredths as decimals, eg 0.15 is the same as <math>\frac{15}{100}</math></li> </ul>
Connecting decimal & fraction tenths & hundredths	1	Connecting decimal fractions to common fractions involving halves and quarters	<ul style="list-style-type: none"> <li>understand the relationship between decimal fractions and common fractions involving halves and quarters</li> </ul>
	2	Connecting decimal fractions to common fractions involving halves, fifths, tenths and hundredths	<ul style="list-style-type: none"> <li>understand the relationship between decimal fractions and common fractions involving halves, fifths, tenths and hundredths</li> </ul>
	3	Connecting decimal fractions to common fractions involving tenths and hundredths	<ul style="list-style-type: none"> <li>understand the relationship between decimal fractions and common fractions involving tenths and hundredths</li> </ul>
			<ul style="list-style-type: none"> <li>recognise and apply decimal notation to express whole numbers, tenths and hundredths as decimals, eg 0.1 is the same as <math>\frac{1}{10}</math></li> </ul>
			<ul style="list-style-type: none"> <li>investigate equivalences using various methods, eg use a number line or a calculator to show that <math>\frac{1}{2}</math> is the same as 0.5 and <math>\frac{5}{10}</math></li> </ul>
	4	Connecting decimal fractions to common fractions	<ul style="list-style-type: none"> <li>understand the relationship between decimal fractions and common fractions</li> </ul>



Learning Journey	Steps	Content	Details
<b>Representing decimal fractions</b>			
Model decimal fractions to 2 decimal places	1	Modelling and representing decimal fractions up to 2 decimal places	<ul style="list-style-type: none"> <li>• model decimal fractions using concrete materials</li> </ul>
			<ul style="list-style-type: none"> <li>• represent decimal fractions, eg as fractions (tenths and hundredths), on number lines, using hundreds grids, in place value models and charts</li> </ul>

## 6 Measures

Length			
Converting length (metric)			
Learning Journey	Steps	Content	Details
Converting units of length (whole numbers)	1	Converting between centimetres and millimetres (whole numbers only)	<ul style="list-style-type: none"> <li>• describe 1 cm as 10 mm</li> <li>• convert between centimetres and millimetres using whole numbers</li> <li>• record measurement equivalents in a table</li> <li>• explain the relationship between the size of a unit and the number of units needed</li> </ul>
Converting units of length (fractions of numbers)	1	Converting between centimetres and millimetres (mixed numerals and fractions)	<ul style="list-style-type: none"> <li>• convert between centimetres and millimetres using mixed numerals and fractions</li> </ul>
Length word problems (metric/customary)			
Length word problems (metric and customary)	1	Solving word problems involving lengths and distances (mixed metric and customary units)	<ul style="list-style-type: none"> <li>• use the 4 operations to solve word problems involving distances including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit</li> </ul>
Length and scale			
Length measurements on diagrams using scale	1	Representing length measurements on diagrams using scale (mixed metric and customary units)	<ul style="list-style-type: none"> <li>• represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale</li> </ul>
Length and 3D objects			
Length and 3D objects	1	Applying length to attributes of three-dimensional objects	<ul style="list-style-type: none"> <li>• recognise the features of a three-dimensional object associated with length that can be measured</li> <li>• describe the length, height and width of a three-dimensional object</li> </ul>
Solving problems in km (whole number)			
Solving problems involving km up to 10 km	1	Solving problems involving kilometres, up to 10 km (whole numbers only)	<ul style="list-style-type: none"> <li>• solve problems using kilometres, eg, Tim and Peter walk 15 km together. Peter walks double the distance that Tim walks. How far does Peter walk?</li> </ul>

Perimeter			
Introducing perimeter			
Learning Journey	Steps	Content	Details
Introducing perimeter	1	Introducing perimeter	<ul style="list-style-type: none"> <li>• use the term 'perimeter' to describe the total distance around a two-dimensional shape</li> <li>• estimate and measure the perimeters of two-dimensional shapes</li> <li>• describe when a perimeter measurement might be used in everyday situations</li> </ul>

Learning Journey	Steps	Content	Details
<b>Perimeter and area</b>			
Finding the perimeter and area of rectangles	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
Relating perimeter and area	1	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

<b>Area</b>			
Learning Journey	Steps	Content	Details
Area of irregular shapes (square grid)	1	Estimating and comparing areas of non-rectilinear shapes using a square grid	• use a square grid to approximate and compare the areas of non-rectilinear shapes
			• compare how different placements of the grid make approximation easier or more difficult
			• find and explain the area of irregular shapes by counting squares or part squares
	2	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
Additive formula for area of a rectangle	1	Developing an additive formula for area of a rectangle	• connect arrays with side lengths through repeated addition leading to multiplication
Area of compound shapes (cm, m)	1	Calculating the area of composite shapes using small measurements in cm and m	• calculate the area of a rectangular composite shape by splitting the shape and calculating each area

Volume and Capacity			
Volume and capacity (metric units)			
Learning Journey	Steps	Content	Details
Reading liquid volume (mL)	1	Introducing formal units for volume and capacity: millilitres	<ul style="list-style-type: none"> <li>• recognise the need for a formal unit smaller than the litre to measure volume and capacity</li> </ul>
			<ul style="list-style-type: none"> <li>• recognise that there are 1000 millilitres in 1 litre, ie 1000 millilitres = 1 litre</li> </ul>
			<ul style="list-style-type: none"> <li>• relate the millilitre to familiar everyday containers and familiar informal units, eg 250 mL fruit juice containers, 1 teaspoon is approximately 5 mL</li> </ul>
	2	Reading scales with 100 millilitre markings	<ul style="list-style-type: none"> <li>• read a scale where every 100 mL is marked and labelled</li> </ul>
			<ul style="list-style-type: none"> <li>• read a scale where every 100 mL is marked and half and 1 litre are labelled</li> </ul>
			<ul style="list-style-type: none"> <li>• read a scale where every 100 mL is marked and every other 100 mL is labelled</li> </ul>
	3	Measuring with millilitres to the nearest 100 mL	<ul style="list-style-type: none"> <li>• use the millilitre as a unit to measure volume and capacity, using a device calibrated in millilitres (read to the nearest 100 mL with every 100 mL or every other 100 mL marked)</li> </ul>
			<ul style="list-style-type: none"> <li>• record volumes and capacities using the abbreviation for millilitres (mL)</li> </ul>
			<ul style="list-style-type: none"> <li>• estimate the capacity of a container in millilitres and check by measuring (measure to the nearest 100 mL with every 100 mL or every other 100 mL marked)</li> </ul>
			<ul style="list-style-type: none"> <li>• compare and order the capacities of 2 or more containers measured in millilitres</li> </ul>
Adding and subtracting (mL, L)	1	Adding and subtracting litres and millilitres	<ul style="list-style-type: none"> <li>• add and subtract measurements in litres and millilitres eg 5 L and 300 mL + 3 L and 200 mL</li> </ul>
Converting units of capacity (mL, L)	1	Converting between units of volume and capacity (whole numbers only)	<ul style="list-style-type: none"> <li>• convert between millilitres and litres using whole numbers and record measurement equivalents in a two-column table</li> </ul>
	2	Converting between standard metric units of volume and capacity with whole numbers and fractions	<ul style="list-style-type: none"> <li>• understand the meaning of metric prefixes, eg milli-</li> </ul>

Learning Journey	Steps	Content	Details
Solving volume word problems (mL, L)	1	Solving word problems involving volume and capacity	<ul style="list-style-type: none"> <li>• use the four operations to solve word problems involving volume and capacity including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit</li> </ul>
<b>Volume and capacity (metric &amp; customary)</b>			
Solving volume word problems (metric & customary)	1	Solving word problems involving liquid volume	<ul style="list-style-type: none"> <li>• use the 4 operations to solve one-step word problems involving liquid volume given in the same units</li> </ul>
Using unit cubes to measure volume	1	Using unit cubes to measure volume	<ul style="list-style-type: none"> <li>• measure volumes by counting unit cubes, using cubic centimetres, cubic inches, cubic feet and improvised units</li> </ul>

<b>Mass</b>			
<b>Mass (metric units)</b>			
Learning Journey	Steps	Content	Details
Investigating mass in packaging	1	Investigating mass in packaging	<ul style="list-style-type: none"> <li>• interpret information about mass on commercial packaging</li> <li>• estimate the mass of a substance in a partially-filled container/packet from the information on the label</li> </ul>
Measuring mass in whole numbers (g, kg)	1	Introducing formal units for mass: the gram	<ul style="list-style-type: none"> <li>• establish the need for a smaller unit of mass and introduce the gram, including that 1000 grams = 1 kilogram</li> <li>• develop a sense of the mass of standard everyday objects in grams, eg an egg is about 50 grams</li> <li>• identify everyday situations where grams are an appropriate unit for measuring the mass</li> <li>• introduce the abbreviation 'g' for recording mass in grams and record masses</li> <li>• calculate the number of grams in a whole number of kilograms</li> <li>• interpret simple fractions (<math>\frac{1}{4}</math>, <math>\frac{1}{2}</math>, <math>\frac{3}{4}</math>) of a kilogram and relate these to the number of grams</li> </ul>
			<ul style="list-style-type: none"> <li>• estimate mass using personal references for grams and 'guess and check'</li> <li>• measure mass in grams by using and interpreting varied scales and images of scales</li> <li>• record mass in grams using the appropriate abbreviation (g)</li> </ul>
			<ul style="list-style-type: none"> <li>• estimate mass using personal references for grams and kilograms</li> <li>• choose appropriate standard units to estimate and measure (g/kg)</li> </ul>
	2	Measuring in grams	<ul style="list-style-type: none"> <li>• estimate mass using personal references for grams and 'guess and check'</li> <li>• measure mass in grams by using and interpreting varied scales and images of scales</li> <li>• record mass in grams using the appropriate abbreviation (g)</li> </ul>
	3	Measuring in grams and kilograms	<ul style="list-style-type: none"> <li>• estimate mass using personal references for grams and kilograms</li> <li>• choose appropriate standard units to estimate and measure (g/kg)</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• measure mass in grams and kilograms by using and interpreting varied scales</li> <li>• record mass in grams, kilograms and mixed units using the appropriate abbreviations (g), (kg), eg 5 kg and 500 g</li> </ul>
Converting units of mass (g, kg)	1	Converting between grams and kilograms (whole numbers only)	<ul style="list-style-type: none"> <li>• describe 1 gram as 1/1000 of a kilogram</li> <li>• apply place value understanding to modelling, describing and recording metric units of measurement</li> <li>• convert between grams and kilograms using whole numbers and record measurement equivalents in a two-column table</li> <li>• explain the relationship between the size of a unit and the number of units needed</li> <li>• convert between mass written in grams and mixed units (kg and g), eg 1250g = 1 kg 250g or 7kg 320g = 7320g</li> </ul>
Compare and order mass (g, kg)	1	Comparing and ordering masses using standard metric units	<ul style="list-style-type: none"> <li>• measure mass by using and interpreting varied scales</li> <li>• compare and order masses using grams and kilograms and justify comparisons</li> <li>• represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale</li> <li>• compare masses using uniform informal units and the symbols &gt;, =, &lt;</li> </ul>
Add and subtract mass	1	Solving addition and subtraction problems involving masses of the same unit	<ul style="list-style-type: none"> <li>• solve addition and subtraction problems involving masses of the same unit</li> </ul>
Mass word problems (metric)	1	Solving one-step word problems involving mass	<ul style="list-style-type: none"> <li>• use the 4 operations to solve one-step word problems involving mass given in the same units</li> </ul>
<b>Mass (customary units)</b>			
Converting between pounds and ounces	1	Converting between pounds and ounces (whole numbers only)	<ul style="list-style-type: none"> <li>• describe 1 lb as 16 oz</li> <li>• convert between pounds and ounces using whole numbers</li> <li>• record measurement equivalents in a table</li> <li>• explain the relationship between the size of a unit and the number of units needed</li> </ul>

Learning Journey	Steps	Content	Details
<b>Mass (metric and customary units)</b>			
Mass word problems (customary and metric)	1	Solving word problems involving mass (mixed metric and customary units)	<ul style="list-style-type: none"> <li>• use the 4 operations to solve word problems involving mass, including problems involving simple fractions or decimals and problems that require expressing measurements given in a larger unit in terms of a smaller unit</li> </ul>
	2	Solving 2-step word problems involving mass (mixed metric and customary)	<ul style="list-style-type: none"> <li>• use the 4 operations to solve 2-step word problems involving mass, including problems involving simple fractions or decimals and problems that require expressing measurements given in a larger unit in terms of a smaller unit</li> </ul>

<b>Time</b>			
<b>Telling time</b>			
Learning Journey	Steps	Content	Details
Telling time to the minute (analog)	1	Telling time to the minute (analogue)	<ul style="list-style-type: none"> <li>• read time on analogue clocks to the minute using the terms 'o'clock', 'past' and 'to', including 'half-past', 'quarter past' and 'quarter to'</li> </ul>
			<ul style="list-style-type: none"> <li>• observe and describe the position or draw the hands of an analogue clock when reading time to the minute, including the hour hand, minute hand and second hand</li> </ul>
			<ul style="list-style-type: none"> <li>• position or draw the hands on an analogue clock to show time to the minute where the time is given using the terms 'o'clock', 'past' and 'to', including 'half-past', 'quarter past' and 'quarter to'</li> </ul>
Telling time to the minute (digital)	1	Telling time to the minute (digital)	<ul style="list-style-type: none"> <li>• read time on 12-hour digital clocks to the minute using the terms 'o'clock', 'past' and 'to', including 'half-past', 'quarter past' and 'quarter to' and write in words</li> </ul>
			<ul style="list-style-type: none"> <li>• record times on analogue clocks to the minute in 12-hour digital format</li> </ul>
			<ul style="list-style-type: none"> <li>• position or draw the hands on an analogue clock to show time to the minute where the time is given in 12-hour digital format</li> </ul>
			<ul style="list-style-type: none"> <li>• connect 12-hour digital displays for times, to the minute, to their corresponding display on an analogue clock</li> </ul>
Telling time to the minute (Roman numeral)	1	Telling time to the minute (Roman numeral clocks)	<ul style="list-style-type: none"> <li>• read time on analogue clocks with Roman numerals to the minute using the terms 'o'clock', 'past' and 'to', including 'half-past', 'quarter past' and 'quarter to'</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>record times on analogue clocks with Roman numerals to the minute in 12-hour digital format</li> <li>observe and describe the position or draw the hands of an analogue clock with Roman numerals when reading time to the minute, including the hour hand, minute hand and second hand</li> <li>position or draw the hands on an analogue clock with Roman numerals to show time to the minute where the time is given using the terms 'o'clock', 'past' and 'to', including 'half-past', 'quarter past' and 'quarter to'</li> <li>position or draw the hands on an analogue clock with Roman numerals to show time to the minute where the time is given in 12-hour digital format</li> <li>connect 12-hour digital displays for times, to the minute, to their corresponding display on an analogue clock with Roman numerals</li> </ul>
<b>Using a.m. and p.m. notation</b>			
Using a.m. and p.m. notation	1	Using am and pm notation	<ul style="list-style-type: none"> <li>know that there are 24 hours in a day</li> <li>recognise that midday/noon divides the day into two equal parts of 12 hours each</li> <li>establish the need to distinguish between times in the first 12 hours of the day and the second 12 hours of the day, and introduce am and pm notation</li> <li>know and record midday/noon as 12pm and 12:00pm, and midnight as 12am and 12:00am</li> <li>use am and pm notation to record times in relation to midday/noon and midnight</li> <li>read times written using am and pm notation using 'past', 'to', morning, afternoon, evening and night appropriately', eg 3:40 pm is 'twenty to four in the afternoon'</li> </ul>
<b>24-hour clock</b>			
24-hour clock	1	Matching 24-hour notation to 12-hour notation	<ul style="list-style-type: none"> <li>convert between 24-hour time notation and 12-hour time notation</li> </ul>
<b>Converting time</b>			
Converting time	1	Converting between units of time (multiplicative conversions only)	<ul style="list-style-type: none"> <li>calculate the number of seconds in a whole number of minutes</li> <li>calculate the number of minutes in a whole number of hours</li> </ul>



Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"><li>• calculate the number of days in a whole number of weeks</li></ul>
			<ul style="list-style-type: none"><li>• calculate the number of months in a whole number of years</li></ul>
			<ul style="list-style-type: none"><li>• solve problems involving conversion between units of time</li></ul>
Calculating elapsed time			
Calculating elapsed time	1	Calculating elapsed time within one unit of measurement	<ul style="list-style-type: none"><li>• estimate and determine elapsed time in hours only</li></ul>
			<ul style="list-style-type: none"><li>• estimate and determine elapsed time in minutes only, without crossing an hour</li></ul>
			<ul style="list-style-type: none"><li>• estimate and determine elapsed time in minutes only, including crossing an hour</li></ul>
Telling time and using timetables			
Using timetables	1	Using timetables (12-hour time)	<ul style="list-style-type: none"><li>• use real-world timetables (12-hour time only) to determine arrival time given the desired departure time, including when the exact departure time is not listed exactly in the timetable, ie needing to use an earlier departure time</li></ul>
			<ul style="list-style-type: none"><li>• use real-world timetables (12-hour time only) to determine departure time given the desired arrival time, including when the arrival time is not listed exactly in the timetable</li></ul>
			<ul style="list-style-type: none"><li>• create timetables using given information</li></ul>
	2	Solving problems relating to elapsed time involving the four operations (to five minutes)	<ul style="list-style-type: none"><li>• use the 4 operations to solve word problems involving intervals of time including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit</li></ul>
Timelines			
Introducing timelines	1	Introducing timelines	<ul style="list-style-type: none"><li>• interpret the sequence of events on a timeline (understanding of scale not expected)</li></ul>

Temperature			
Measuring temperature (Celsius)			
Learning Journey	Steps	Content	Details
Temperature: Celsius	1	Measuring temperature	<ul style="list-style-type: none"> <li>• recognise the need for formal units to measure temperature</li> </ul>
			<ul style="list-style-type: none"> <li>• use a thermometer to measure and compare temperatures to the nearest degree Celsius</li> </ul>
			<ul style="list-style-type: none"> <li>• record temperatures to the nearest degree Celsius using the symbol for degrees (°)</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• use a digital or analogue thermometer to take and record daily temperature readings</li> </ul>

## 7 Geometry

Patterns in shape			
Patterns with shape			
Learning Journey	Steps	Content	Details
Generate shape patterns from a given rule	1	Generating shape patterns from a given rule	<ul style="list-style-type: none"> <li>• extend and create a shape pattern given the core of the sequence</li> </ul>
			<ul style="list-style-type: none"> <li>• identify apparent features of that pattern that were not explicit in the rule</li> </ul>

2D shape			
2D shape			
Learning Journey	Steps	Content	Details
Identifying features of 2D shapes	1	Identifying spatial features in two-dimensional shapes	<ul style="list-style-type: none"> <li>• identify points, line segments, rays, angles (right, acute, obtuse) and perpendicular and parallel lines</li> </ul>
Classifying shapes	1	Classifying plane shapes by their spatial features	<ul style="list-style-type: none"> <li>• classify plane shapes by the nature and number of sides, angles and symmetry; including parallel/perpendicular sides, right, obtuse, acute angles</li> </ul>
Sorting plane shapes	1	Sorting plane shapes by their spatial features	<ul style="list-style-type: none"> <li>• sort a group of plane shapes by their spatial features</li> <li>• identify how a group of plane shapes has been sorted/classified</li> </ul>
Spheres	1	Identifying spheres in the environment	<ul style="list-style-type: none"> <li>• identify spheres in the environment and from drawings, photographs and descriptions</li> <li>• investigate types of spheres used in commercial packaging and give reasons for some being more commonly used</li> </ul>
Pyramids	1	Identifying pyramids in the environment	<ul style="list-style-type: none"> <li>• identify pyramids in the environment and from drawings, photographs and descriptions</li> <li>• investigate types of pyramids used in commercial packaging and give reasons for some being more commonly used</li> </ul>
Symmetry			
Drawing lines of symmetry	1	Drawing lines of symmetry on given designs and shapes	<ul style="list-style-type: none"> <li>• recognise that some designs and shapes may have more than 1 line of symmetry</li> <li>• identify and draw all lines of symmetry on designs and shapes</li> <li>• determine the total number of lines of symmetry on designs and shapes</li> <li>• determine whether or not a given line through designs and shapes is a line of symmetry</li> </ul>

Learning Journey	Steps	Content	Details
	2	Completing symmetrical designs	<ul style="list-style-type: none"> <li>complete symmetrical designs and shapes given their line of symmetry and one half of the design or shape</li> </ul>

Angles			
Exploring angles			
Learning Journey	Steps	Content	Details
Classifying angles	1	Classifying angles in relation to a right angle	<ul style="list-style-type: none"> <li>classify angles as 'less than a right angle', 'about the same as a right angle', 'greater than a right angle'</li> </ul>
	2	Classifying angles as acute, right or obtuse	<ul style="list-style-type: none"> <li>identify and name angles as acute, right or obtuse</li> </ul>
			<ul style="list-style-type: none"> <li>categorise angles as acute, right or obtuse</li> <li>draw and create angles of a given size: acute, right, obtuse (no protractors)</li> </ul>
Calculating angles around a point	1	Classifying angles as acute, right, obtuse, straight, reflex or a revolution	<ul style="list-style-type: none"> <li>understand and describe angles greater than or equal to 180°</li> </ul>
			<ul style="list-style-type: none"> <li>identify and name angles as acute, right, obtuse, straight, reflex and revolution</li> </ul>
			<ul style="list-style-type: none"> <li>categorise angles as acute, right, obtuse, straight, reflex and revolution</li> <li>draw and create angles of a given size: acute, right, obtuse, straight, reflex and revolution (no protractors)</li> </ul>
Compare and order angles	1	Comparing and ordering angles in a shape using statements and inequality symbols	<ul style="list-style-type: none"> <li>compare and order angles using statements and inequality symbols, eg Angle A is [ &lt;, &gt; or = ] Angle B</li> </ul>
Exploring points and lines			
Labelling points and lines	1	Labelling points and lines	<ul style="list-style-type: none"> <li>define, name, label and draw points, lines and line segments</li> </ul>
			<ul style="list-style-type: none"> <li>define, name, label and draw lines using capital letters</li> </ul>

Position, movement and direction			
Compass directions and maps			
Learning Journey	Steps	Content	Details
Legends on a map	1	Using legends on maps	<ul style="list-style-type: none"> <li>establish the need for legends on maps with and without grid referencing</li> </ul>
			<ul style="list-style-type: none"> <li>use the legend of a map to determine the feature located at a given grid reference</li> </ul>
			<ul style="list-style-type: none"> <li>use the legend of a map to determine the grid reference for a given feature</li> </ul>
Compass directions	1	Introducing cardinal compass directions	<ul style="list-style-type: none"> <li>understand, locate and label the 4 cardinal compass directions on a compass rose: north (N), south (S), east (E) and west (W)</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• connect the 4 cardinal compass directions to features of the local area from their particular location</li> </ul>
			<ul style="list-style-type: none"> <li>• determine the direction of other cardinal compass directions when given one of the cardinal compass directions</li> </ul>
Describing locations and drawing routes	1	Describing locations on maps using cardinal compass directions	<ul style="list-style-type: none"> <li>• recognise that north (N) is typically represented by an arrow on a map</li> </ul>
			<ul style="list-style-type: none"> <li>• use the 4 cardinal compass directions to describe the location of one feature in relation to another on a map that has an arrow representing north</li> </ul>
	2	Drawing routes on maps using cardinal compass directions	<ul style="list-style-type: none"> <li>• draw a route on a map given a sequence of directions involving cardinal directions and landmarks</li> </ul>
			<ul style="list-style-type: none"> <li>• use cardinal directions and landmarks to describe a route between 2 locations on a map</li> </ul>

## 8 Operations & Algebraic Thinking

Algebra			
Substitution			
Learning Journey	Steps	Content	Details
Substitution	1	Substituting and finding unknown values represented by letters (values within 10)	<ul style="list-style-type: none"><li>• give general algebraic descriptions of the relationship between terms and its position in a sequence and justify the solution</li></ul>
			<ul style="list-style-type: none"><li>• generalise a pattern arising from a problem-solving context, using a linear equation, and verify by substitution</li></ul>
Formulae			
Formula/formulas	1	Solving problems by substituting into formulas	<ul style="list-style-type: none"><li>• solve problems by substituting into formulas, eg, the rule for making a cake is 'use 3 times as much flour (f) as butter (b). Which is the correct formula?'</li></ul>

## 9 Statistics and data

Data			
Introducing data presentation			
Learning Journey	Steps	Content	Details
Pictograms/picture graphs	1	Collecting, recording and interpreting data in tables and picture graphs	• choose effective ways to collect and record data in a table
			• read and interpret data in tables
			• choose effective ways to collect and record data using a picture graph
			• read and interpret data in picture graphs
Picture graphs with many-to-one correspondence	1	Introducing picture graphs with many-to-one correspondence	• interpret the key on a picture graph with many-to-one correspondence
			• read and interpret data in a picture graph with many-to-one correspondence
			• recognise and remedy errors or unsuitable scales in a picture graph
	2	Representing data in picture graphs using many-to-one correspondence	• represent given or collected categorical data in picture graphs
			• discuss and determine a suitable scale of many-to-one correspondence to draw graphs for large data sets and state the key used
			• use grid paper to assist in drawing graphs that represent data using a scale of many-to-one correspondence
Line graphs	1	Introducing and reading line graphs	• become familiar with the structure of a line graph
			• read and interpret a basic line graph displaying time series data
	2	Representing and reading data in a given line graph	• complete a line graph using a given data set
			• answer and ask questions relating to data in a line graph including sum, comparison and difference questions
Column graphs/bar graphs	1	Introducing column graphs with many-to-one correspondence	• determine the scale on a column graph
			• read and interpret data in a column graph with many-to-one correspondence
			• recognise and remedy errors or unsuitable scales in a column graph

Learning Journey	Steps	Content	Details
	2	Representing data in column graphs using many-to-one correspondence	<ul style="list-style-type: none"> <li>represent given or collected categorical data in column graphs</li> </ul>
			<ul style="list-style-type: none"> <li>discuss and determine a suitable scale of many-to-one correspondence to draw graphs for large data sets and state the key used</li> </ul>
			<ul style="list-style-type: none"> <li>use grid paper to assist in drawing graphs that represent data using a scale of many-to-one correspondence</li> </ul>
			<ul style="list-style-type: none"> <li>use data in a spreadsheet to create column graphs with appropriately labelled axes</li> </ul>
			<ul style="list-style-type: none"> <li>mark equal spaces on axes, name and label axes, and choose appropriate titles for graphs</li> </ul>
			<ul style="list-style-type: none"> <li>interpret data in column graph; ask and answer questions related to the data in the display; draw conclusions</li> </ul>
Pie chart/sector graph/circle graph	1	Introducing pie charts (no percentages)	<ul style="list-style-type: none"> <li>become familiar with the structure of a pie chart; identify the key features of pie charts</li> </ul>
			<ul style="list-style-type: none"> <li>read and interpret a pie chart using whole numbers and a simple key; make simple comparisons between categories, eg' There are 2 times as many children who play tennis than soccer' or 'Horror movies are the most popular category'</li> </ul>
			<ul style="list-style-type: none"> <li>compare pie charts to other displays</li> </ul>
	2	Representing data in a simple pie chart (no percentages)	<ul style="list-style-type: none"> <li>complete a given pie chart using given or collected data with a selected number of responses</li> <li>interpret data in a pie chart; ask and answer questions related to the data in the display; draw conclusions</li> </ul>
Solving problems using charts	1	Solving problems using column graphs, picture graphs, tables	<ul style="list-style-type: none"> <li>solve comparison, addition and subtraction problems using a range of data displays</li> </ul>
Collecting and sorting data			
Collecting and sorting data	1	Collecting and sorting data	<ul style="list-style-type: none"> <li>read data displayed in a picture graph</li> </ul>
Fractions on a line plot			
Fractions on a line plot	1	Representing and interpreting fraction measurements on a line plot	<ul style="list-style-type: none"> <li>make a line plot to display a data set of measurements in fractions of a unit (<math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{8}</math>)</li> </ul>
			<ul style="list-style-type: none"> <li>solve problems involving addition and subtraction of fractions by using information presented in line plots</li> </ul>



Probability and chance			
Identifying and exploring chance events			
Learning Journey	Steps	Content	Details
Chance 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
	3	Exploring everyday events that cannot occur simultaneously	• identify and discuss everyday events that cannot occur at the same time
	4	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 III

# Grade 5

## 10 Number

Number and place value			
Numbers up to 6 digits			
Learning Journey	Steps	Content	Details
Reading and writing numbers to 10 million	1	Reading and writing 6-digit numbers	<ul style="list-style-type: none"> <li>• apply an understanding of place value to read numbers of up to 6 digits</li> <li>• apply an understanding of place value to write numbers of up to 6 digits</li> </ul>
			<ul style="list-style-type: none"> <li>• apply an understanding of place value to read numbers to 10 million</li> <li>• apply an understanding of place value to write numbers to 10 million</li> </ul>
	2	Reading and writing numbers to 10 million	<ul style="list-style-type: none"> <li>• apply an understanding of place value to read numbers of any size</li> <li>• apply an understanding of place value to write numbers of any size</li> </ul>
			<ul style="list-style-type: none"> <li>• apply an understanding of place value to read numbers of any size</li> <li>• apply an understanding of place value to write numbers of any size</li> </ul>
	3	Reading and writing numbers of any size	<ul style="list-style-type: none"> <li>• state the place value of digits in numbers of up to 6 digits</li> <li>• 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?'</li> <li>• represent and describe whole numbers to 1 000 000</li> </ul>
			<ul style="list-style-type: none"> <li>• name the place value for an underlined digit in a number</li> <li>• identify the value of an underlined digit in a number</li> </ul>
Place value of 6 digit numbers	1	Identifying the place value of 6-digit numbers	<ul style="list-style-type: none"> <li>• state the place value of digits in numbers of any size</li> <li>• 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?'</li> <li>• recognise different abbreviations of numbers used in everyday contexts, eg \$35 M represents \$35 000 000</li> <li>• understand the role of zero as a placeholder</li> <li>• use place value understanding to count by 10 000 and 100 000</li> </ul>
	2	Naming the place value for a digit in a number	
Place value of numbers of any size	1	Identifying the place value of numbers of any size	<ul style="list-style-type: none"> <li>• state the place value of digits in numbers of any size</li> <li>• 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?'</li> <li>• recognise different abbreviations of numbers used in everyday contexts, eg \$35 M represents \$35 000 000</li> <li>• understand the role of zero as a placeholder</li> <li>• use place value understanding to count by 10 000 and 100 000</li> </ul>

Learning Journey	Steps	Content	Details
	2	Identifying the place value of digits in numbers up to 10 million	<ul style="list-style-type: none"> <li>state the place value of digits in numbers of up to 10 million</li> </ul>
			<ul style="list-style-type: none"> <li>pose and answer questions that extend place value understanding of numbers, eg 'What happens if I rearrange the digits in the number 12 345 678?', 'How can I rearrange the digits to make the largest number?'</li> </ul>
			<ul style="list-style-type: none"> <li>represent and describe whole numbers to 10 000 000 pictorially and symbolically</li> </ul>
Place value and powers of 10	1	Understanding how place values change by powers of 10 when moving left or right in a number	<ul style="list-style-type: none"> <li>understand how place values change by powers of 10 when moving left or right in a number</li> </ul>
	2	Understanding the role of place value when increasing or decreasing a digit in a number	<ul style="list-style-type: none"> <li>find numbers 1, 10, 100, 1000, 10 000, 100 000 before or after a given number by applying place value knowledge</li> </ul>
			<ul style="list-style-type: none"> <li>count in steps of powers of 10</li> </ul>
Comparing numbers of any size	3	Writing the value of a number in a specific place value with powers of 10	<ul style="list-style-type: none"> <li>write the value of a number in a specific place value with powers of 10</li> </ul>
	1	Comparing two 6-digit numbers	<ul style="list-style-type: none"> <li>compare two 6-digit numbers using words and symbols <math>&lt;</math>, <math>=</math>, <math>&gt;</math></li> </ul>
		Comparing 7-digit numbers	<ul style="list-style-type: none"> <li>compare 7-digit numbers using words and symbols <math>&lt;</math>, <math>=</math>, <math>&gt;</math></li> <li>arrange 7-digit numbers in ascending and descending order</li> </ul>
Ordering numbers of any size	2	Comparing 2 numbers of any size	<ul style="list-style-type: none"> <li>compare 2 numbers of any size using words and symbols <math>&lt;</math>, <math>=</math>, <math>&gt;</math></li> </ul>
	1	Ordering 6-digit numbers	<ul style="list-style-type: none"> <li>arrange numbers up to 6 digits in ascending and descending order</li> </ul>
		Ordering numbers of any size	<ul style="list-style-type: none"> <li>arrange numbers of any size in ascending and descending order</li> </ul>
Partitioning numbers of any size	2	Using place value to partition 6-digit numbers	<ul style="list-style-type: none"> <li>use place value to partition numbers of up to 6 digits, eg 672 012 is <math>600\,000 + 70\,000 + 2000 + 10 + 2</math></li> </ul>
	2	Using place value to partition numbers of any size	<ul style="list-style-type: none"> <li>use place value understanding and models to partition numbers of any size</li> </ul>
		Using place value to partition 7-digit numbers	<ul style="list-style-type: none"> <li>use place value to partition numbers of up to 7 digits, eg 4 673 012 is <math>4\,000\,000 + 600\,000 + 70\,000 + 3000 + 10 + 2</math></li> </ul>
Non-standard partitioning 6- and 7-digit numbers	1	Using non-standard partitioning with 6-digit numbers	<ul style="list-style-type: none"> <li>partition numbers of up to 6 digits in non-standard forms, eg 670 000 as <math>500\,000 + 170\,000</math></li> </ul>
	2	Using non-standard partitioning with numbers of any size	<ul style="list-style-type: none"> <li>partition numbers of any size in non-standard forms</li> </ul>

Learning Journey	Steps	Content	Details
	3	Using non-standard partitioning with 7-digit numbers	<ul style="list-style-type: none"><li>partition numbers of up to 7 digits in non-standard forms, eg, 5 617 000 as 5 500 000 + 117 000</li></ul>
Rounding numbers of any size	1	Rounding 6-digit numbers	<ul style="list-style-type: none"><li>round 6-digit numbers to any place value</li></ul>
	2	Rounding numbers to a specified place value	<ul style="list-style-type: none"><li>round numbers to a specified place value, eg round 5 461 883 to the nearest million</li></ul>
	3	Rounding numbers to the nearest 10 000, 100 000 or 1 000 000	<ul style="list-style-type: none"><li>round to the nearest 10, 000, 100 000 or 1 000 000 with and without models (place value grids, number lines)</li></ul>
Round to estimate	1	Rounding 4 and 5-digit numbers to the nearest 10, 100 or 1000 to estimate sums	<ul style="list-style-type: none"><li>round 4- and 5-digit numbers to the nearest 10, 100 or 1000 to estimate sums</li></ul>
	2	Rounding 4 and 5-digit numbers to the nearest 10, 100 or 1000 to estimate differences	<ul style="list-style-type: none"><li>round 4 and 5-digit numbers to the nearest 10, 100 or 1000 to estimate differences using models eg, number lines</li></ul>
	3	Rounding to estimate products	<ul style="list-style-type: none"><li>estimate products by rounding</li></ul>
Using numbers in context	1	Investigating integers in context	<ul style="list-style-type: none"><li>interpret integers in everyday contexts, eg temperature</li></ul>
			<ul style="list-style-type: none"><li>count forwards and backwards with positive and negative whole numbers, including through 0 (in context)</li></ul>
Using numbers of any size	1	Using numbers of any size	<ul style="list-style-type: none"><li>use numbers of any size in real-life situations, including in money problems</li></ul>
			<ul style="list-style-type: none"><li>interpret information from the internet, the media, the environment and other sources that use large numbers</li></ul>
Square and triangular numbers			
Square numbers	1	Describing square numbers	<ul style="list-style-type: none"><li>model square numbers and record each number group in numerical and diagrammatic form</li></ul>
			<ul style="list-style-type: none"><li>explain how square numbers are created</li></ul>
			<ul style="list-style-type: none"><li>explore square numbers using arrays, grid paper or digital technologies</li></ul>
			<ul style="list-style-type: none"><li>recognise and explain the relationship between the name 'square' number and the way the pattern of numbers is created</li></ul>
Triangular numbers	1	Describing triangular numbers	<ul style="list-style-type: none"><li>model triangular numbers and record each number group in numerical and diagrammatic form</li></ul>
			<ul style="list-style-type: none"><li>explore triangular numbers using arrays, grid paper or digital technologies</li></ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• recognise and explain the relationship between the name 'triangular' number and the way the pattern of numbers is created</li> <li>• model triangular numbers using matchsticks</li> <li>• explain how triangular numbers are created</li> </ul>
<b>Roman numerals to 1000</b>			
Roman numerals to 1000	1	Reading and writing Roman numerals to 1000 (M)	<ul style="list-style-type: none"> <li>• read and write Roman numerals to 1000 (M)</li> <li>• recognise years written in Roman numerals</li> </ul>

<b>Addition and subtraction</b>			
<b>Formal method for addition</b>			
Learning Journey	Steps	Content	Details
Adding numbers of any size (no regrouping)	1	Using a formal written algorithm for addition calculations involving numbers of any size (no regrouping)	<ul style="list-style-type: none"> <li>• apply algorithms to solve problems without regrouping, with the same number of places and with a different number of places; include opportunities for students to write their own algorithms with digits in correct place value positions; include word problems</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>
Adding numbers of any size (with regrouping)	1	Using a formal written algorithm for addition calculations involving numbers of any size (with regrouping)	<ul style="list-style-type: none"> <li>• 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</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>
Adding numbers of any size	1	Using a formal written algorithm for addition calculations of 3 or more addends up to any size (with and without regrouping)	<ul style="list-style-type: none"> <li>• apply algorithms with 3 or more addends with the same number of places and with a different number of places; include opportunities for students to write their own algorithms with digits in correct place value positions; include word problems</li> </ul>

Learning Journey	Steps	Content	Details
<b>Formal method for subtraction</b>			
Subtracting numbers of any size (no exchange)	1	Using a formal written algorithm to record subtraction calculations involving numbers of any size (without decomposing)	<ul style="list-style-type: none"> <li>• 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</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>
Subtracting numbers of any size (with exchange)	1	Using a formal written algorithm to record subtraction calculations involving numbers of any size (with decomposing)	<ul style="list-style-type: none"> <li>• 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</li> <li>• use estimation or reverse operation to check the reasonableness of solutions</li> </ul>
<b>Addition and subtraction strategies</b>			
Using a bar model to add and subtract	1	Representing addition or subtraction problems using a bar model	<ul style="list-style-type: none"> <li>• use a bar model as a tool to represent an addition or subtraction problem</li> <li>• select an appropriate mental or written strategy to solve the problem</li> </ul>
Using equal adjustments to subtract	1	Using equal adjustments to subtract up to 3-digit numbers	<ul style="list-style-type: none"> <li>• model and solve subtraction problems using equal adjustments</li> <li>• record and explain the use of the strategy</li> </ul>
Efficient strategies to add and subtract	1	Applying efficient strategies for addition and subtraction calculations involving numbers of any size	<ul style="list-style-type: none"> <li>• add 3 or more numbers with different numbers of digits</li> <li>• use mental and/or written strategies efficiently</li> <li>• use mathematical language to describe addition and subtraction strategies</li> <li>• apply efficient strategies to solve word problems involving addition and subtraction</li> <li>• represent calculations using appropriate recording strategies</li> <li>• justify the choice of strategy for a given calculation</li> </ul>

Learning Journey	Steps	Content	Details
Checking accuracy of calculations			
Checking accuracy of calculations	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
Roman numerals			
Adding and subtracting with Roman numerals	1	Adding and subtracting 1s and 10s using Roman numerals to 1000 (M)	• add and subtract 1s and 10s using Roman numerals to 1000 (M)
	2	Solving addition and subtraction problems using Roman numerals	• solve addition problems involving Roman numerals eg 10 more, 1 more
			• solve subtraction problems involving Roman numerals eg 10 less, 1 less
Solving two-step problems			
Addition and subtraction with 2-step problems	1	Solving addition and subtraction two-step problems in context (max sum 10 000)	• read and interpret a word problem
			• decide with operations and strategies to use and explain why
			• solve an addition and subtraction two-step problem

<b>Multiplication and division</b>			
<b>Multiplying - expanded algorithm</b>			
Learning Journey	Steps	Content	Details
Multiply 2 digits by 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
Multiply 3 digits by 1 digit - expanded algorithm	1	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

Learning Journey	Steps	Content	Details
Multiply 4 digits by 1 digit - expanded algorithm	1	Multiplying 4-digit numbers by 1-digit numbers using the expanded algorithm	<ul style="list-style-type: none"> <li>• multiply the ones, then the tens, then the hundreds and then the thousands, with and without regrouping</li> <li>• model the method with place value models or diagrams; relate to the area model</li> <li>• check answers to mental calculations using inverse solutions or digital technologies</li> </ul>
Multiply 2-digits by 2-digits - extended algorithm	1	Multiplying 2-digit numbers by 2-digit numbers using the extended form of the formal algorithm	<ul style="list-style-type: none"> <li>• multiply 2-digit by 2-digit numbers using extended form, with and without regrouping</li> <li>• check answers to mental calculations using digital technologies</li> <li>• use inverse operations to justify solutions</li> </ul>
Multiply 3-digits by 2-digits - extended algorithm	1	Multiplying 3-digit numbers by 2-digit numbers using the extended form of the formal algorithm	<ul style="list-style-type: none"> <li>• multiply 3-digit by 2-digit numbers using extended form, with and without regrouping</li> <li>• check answers to mental calculations using digital technologies</li> <li>• use inverse operations to justify solutions</li> </ul>
4 digits by 2 digits - expanded algorithm	1	Multiplying 4-digit numbers by 2-digit numbers using the expanded algorithm	<ul style="list-style-type: none"> <li>• multiply the ones, then the tens, then the hundreds and then the thousands, with and without regrouping</li> <li>• model the method with place value models or diagrams; relate to the area model</li> <li>• check answers to mental calculations using inverse solutions or digital technologies</li> </ul>
Multi-digit numbers - expanded algorithm	1	Multiply multi-digit whole numbers using the standard algorithm	<ul style="list-style-type: none"> <li>• apply the written algorithm to multiply multi-digit whole numbers</li> </ul>
<b>Multiplying - split method</b>			
Multiplying 3 digits by 1 digit - split method	1	Multiplying 3-digit numbers by 1-digit numbers using split method	<ul style="list-style-type: none"> <li>• multiply the hundreds, then the tens and then the ones</li> <li>• check answers to mental calculations using digital technologies</li> <li>• use inverse operations to justify solutions</li> </ul>
Multiplying 4 digits by 1 digit - split method	1	Multiplying 4-digit numbers by 1-digit numbers using split method	<ul style="list-style-type: none"> <li>• multiply the thousands, then the hundreds, then the tens and then the ones</li> <li>• check answers to mental calculations using digital technologies</li> <li>• use inverse operations to justify solutions</li> </ul>
<b>Multiplying - area model</b>			
Multiplying 3 digits by 1 digit - area model	1	Multiplying 3-digit numbers by 1-digit numbers using an area model	<ul style="list-style-type: none"> <li>• use an area model for 3-digit by 1-digit multiplication</li> <li>• check answers to mental calculations using digital technologies</li> </ul>



Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• use inverse operations to justify solutions</li> </ul>
Multiplying 4 digits by 1 digit - area model	1	Multiplying 4-digit numbers by 1-digit numbers using an area model	<ul style="list-style-type: none"> <li>• use an area model for 4-digit by 1-digit multiplication</li> <li>• check answers to mental calculations using digital technologies</li> <li>• use inverse operations to justify solutions</li> </ul>
Multiplying 2 digits by 2 digits - area model	1	Multiplying 2-digit numbers by 2-digit numbers using an area model	<ul style="list-style-type: none"> <li>• use an area model for 2-digit by 2-digit multiplication</li> <li>• check answers to mental calculations using digital technologies</li> <li>• use inverse operations to justify solutions</li> </ul>
<b>Multiplying - contracted model</b>			
Multiplying 2 digits by 1 digit - contracted model	1	Multiplying 2-digit numbers by 1-digit numbers using the contracted algorithm	<ul style="list-style-type: none"> <li>• multiply the ones, then the tens, with and without regrouping</li> <li>• use inverse operations or digital technologies to check solutions</li> </ul>
Multiplying 3 digits by 1 digit - contracted model	1	Multiplying 3-digit numbers by 1-digit numbers using the contracted algorithm	<ul style="list-style-type: none"> <li>• multiply the ones, then the tens, then the hundreds, with and without regrouping</li> <li>• use inverse operations or digital technologies to check solutions</li> </ul>
Multiplying 4 digits by 1 digit - contracted model	1	Multiplying 4-digit numbers by 1-digit numbers using the contracted algorithm	<ul style="list-style-type: none"> <li>• multiply the ones, then the tens, then the hundreds and then the thousands, with and without regrouping</li> <li>• use inverse operations or digital technologies to check solutions</li> </ul>
	2	Multiplying 4-digit numbers by 2-digit numbers using the contracted algorithm	<ul style="list-style-type: none"> <li>• multiply the ones, then the tens, then the hundreds and then the thousands, with and without regrouping</li> <li>• use inverse operations or digital technologies to check solutions</li> </ul>
<b>Multiplying - rounding &amp; compensating</b>			
Rounding, compensating and partitioning	1	Multiplying 1-digit and 2-digit numbers using rounding and compensating	<ul style="list-style-type: none"> <li>• use known facts to solve multiplication problems by adding on or taking off, eg <math>5 \times 100</math> is 500, so <math>5 \times 99</math> is 5 less, which is 495</li> <li>• explain and justify the use of the strategy</li> </ul>
<b>Multiplying using factors</b>			
Multiplying using factors	1	Multiplying by factorising (using the distributive law)	<ul style="list-style-type: none"> <li>• split factors, eg <math>50 \times 8</math> is the same as <math>50 \times 2 \times 4</math>, which becomes <math>100 \times 4</math></li> <li>• explain and justify the use of the strategy</li> </ul>
	2	Factorising to multiply a 2-digit number by a 2-digit number	<ul style="list-style-type: none"> <li>• factorise to multiply a 2-digit number by a 2-digit number, eg <math>12 \times 25 = 3 \times 4 \times 25 = 3 \times 100 = 300</math></li> </ul>

Learning Journey	Steps	Content	Details
Multiply by doubles, halves and thirds			
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
	2	Multiplying by 2, 4 or 8 using repeated doubling	• use doubling as a strategy to multiply 2, eg $70 \times 2$ is double 70
			• use double-double as a strategy to multiply by 4, eg $70 \times 4$ is double-double 70 which is 280
Doubling and halving	1	Using doubling and halving to solve multiplication problems with 2-digit and 1-digit numbers	• use doubling as a strategy to multiply by 8, eg $70 \times 8$ is double-double-double 70 which is 560
	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 $24 \times 6$ as $12 \times 12$
			• explain and justify the use of the strategy
Doubling and halving or thirding and trebling	1	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 $24 \times 50$ as $12 \times 100$
			• explain and justify the use of the strategy
	2	Using doubling and halving or thirding and trebling to solve multiplication problems	• mentally adjust a multiplication problem using doubling and halving or thirding and trebling where appropriate, eg $18 \times 3$ as $6 \times 9$ or $24 \times 6$ as $12 \times 12$
			• explain and justify the use of the strategy
Factors and multiples			
Factor pairs	1	Finding factors for whole numbers up to 100	• determine all 'factors' of a given whole number up to 100
			• determine the 'highest common factor' (HCF) of 2 whole numbers
			• determine whether a particular number is a factor of a given number using digital technologies
			• recognise that when a given number is divided by 1 of its factors, the result must be a whole number
Common factors	1	Finding common factors for two numbers	• find common factors for two numbers
	2	Finding factors for whole numbers up to 144	• determine all 'factors' of a given whole number up to 144
			• determine the 'highest common factor' (HCF) of 2 whole numbers

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>determine whether a particular number is a factor of a given number using digital technologies</li> </ul>
			<ul style="list-style-type: none"> <li>recognise that when a given number is divided by 1 of its factors, the result must be a whole number</li> </ul>
	3	Finding the highest common factor using a list	<ul style="list-style-type: none"> <li>find the highest common factor using a list</li> </ul>
Multiples	1	Finding multiples up to 100	<ul style="list-style-type: none"> <li>determine 'multiples' of a given whole number</li> <li>determine the 'lowest common multiple' (LCM) of 2 whole numbers</li> </ul>
	2	Finding multiples up to 144	<ul style="list-style-type: none"> <li>determine 'multiples' of a given whole number</li> <li>determine the 'lowest common multiple' (LCM) of 2 whole numbers</li> </ul>
	3	Finding the lowest common multiple of 2 whole numbers less than or equal to 12	<ul style="list-style-type: none"> <li>find the lowest common multiple of 2 whole numbers less than or equal to 12</li> </ul>
Solving word problems: factors and multiples	1	Solving problems using factors and multiples	<ul style="list-style-type: none"> <li>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?'</li> </ul>
<b>Multiplying with multiples</b>			
Multiplication using multiples of 10 and 100	1	Representing and using known facts to multiply two 2-digit multiples of 10	<ul style="list-style-type: none"> <li>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 <math>30 \times 4</math> to solve <math>30 \times 40</math> as <math>(30 \times 4) \times 10</math></li> <li>know that multiplying by 10 shifts the digits 1 place to the left</li> </ul>
			<ul style="list-style-type: none"> <li>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 <math>30 \times 4</math> to solve <math>30 \times 400</math> as <math>(30 \times 4) \times 100</math></li> <li>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</li> </ul>
	2	Representing and using known facts to multiply 2 multiples of 10 or 100	
Multiplication using multiples of 1000	1	Using known facts to multiply 1-digit numbers with multiples of 1000	<ul style="list-style-type: none"> <li>use known facts and place value understanding to solve multiplication problems with multiples of 1000, eg <math>3 \times 6 = 18</math> so <math>3 \times 6000 = 18\ 000</math></li> <li>explain and justify the use of the strategy</li> </ul>

Learning Journey	Steps	Content	Details
	2	Using known facts to multiply 1-digit numbers with multiples of 10 000	<ul style="list-style-type: none"> <li>• use known facts and place value understanding to solve multiplication problems with multiples of 1000, eg <math>3 \times 6 = 18</math> so <math>3 \times 60\,000 = 180\,000</math></li> <li>• explain and justify the use of the strategy</li> </ul>
<b>Multiplication word problems</b>			
Solving multiplication word problems	1	Solving multiplication word problems	<ul style="list-style-type: none"> <li>• apply appropriate mental strategies to solve multiplication word problems</li> <li>• apply appropriate written strategies to solve multiplication word problems</li> <li>• apply appropriate digital technologies to solve multiplication word problems</li> <li>• use the appropriate operation when solving problems in real-life situations</li> <li>• use inverse operations to justify solutions</li> <li>• record the strategy used to solve multiplication word problems</li> <li>• use selected words to describe each step of the solution process</li> </ul>
<b>Dividing - contracted algorithm</b>			
2 digits by 1 digit - contracted 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
3 digits by 1 digit - contracted 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 and without remainders and zeros in answers	• apply the written algorithm to divide a 3-digit number by a 1-digit number, with and without remainders and zeros in the answer
	3	Dividing a 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
4 digits by 1 digit - contracted algorithm	1	Dividing a 4-digit number by a 1-digit divisor using the contracted algorithm, no remainders or zeros in answers	• apply the written algorithm to divide a 4-digit number by a 1-digit number, without remainders and without zeros in the answer

Learning Journey	Steps	Content	Details
	2	Dividing a 4-digit number by a 1-digit divisor using the contracted algorithm, with remainders but without zeros in answers	• apply the written algorithm to divide a 4-digit number by a 1-digit number, with remainders but without zeros in the answer
	3	Dividing a 4-digit number by a 1-digit divisor using the contracted algorithm, with and without remainders and zeros in answers	• apply the written algorithm to divide a 4-digit number by a 1-digit number, with and without remainders and zeros in the answer
<b>Dividing - extended algorithm</b>			
2 digits 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
3 digits by 1 digit - extended algorithm	1	Dividing a 3-digit number by a 1-digit divisor using the extended algorithm, no remainders or zeros in answers	• apply the written algorithm to divide a 3-digit number by a 1-digit number, without remainders and without zeros in the answer
	2	Dividing a 3-digit number by a 1-digit divisor using the extended algorithm, with remainders but without zeros in answers	• apply the written algorithm to divide a 3-digit number by a 1-digit number, with remainders but without zeros in the answer
	3	Dividing a 3-digit number by a 1-digit divisor using the extended algorithm, with and without remainders and zeros in answers	• apply the written algorithm to divide a 3-digit number by a 1-digit number, with and without remainders and zeros in the answer
4 digits by 1 digit - extended algorithm	1	Dividing a 4-digit number by a 1-digit divisor using the extended algorithm, no remainders or zeros in answers	• apply the written algorithm to divide a 4-digit number by a 1-digit number, without remainders and without zeros in the answer
	2	Dividing a 4-digit number by a 1-digit divisor using the extended algorithm, with remainders but without zeros in answers	• apply the written algorithm to divide a 4-digit number by a 1-digit number, with remainders but without zeros in the answer
	3	Dividing a 4-digit number by a 1-digit divisor using the extended algorithm, with and without remainders and zeros in answers	• apply the written algorithm to divide a 4-digit number by a 1-digit number, with and without remainders and zeros in the answer
4 digits by 2 digits - extended algorithm	1	Dividing up to a 4-digit number by a 2-digit divisor using the division algorithm (extended/long)	• apply the written extended (long) algorithm to divide up to a 4-digit number by a 2-digit number, with and without remainders, with and without zeros in the answer
Divide multi-digit numbers - extended algorithm	1	Dividing up to a 4-digit number by a 2-digit divisor (long division and whole number remainder)	• divide up to a 4-digit number by a 2-digit divisor (long division and whole number remainder)

Learning Journey	Steps	Content	Details
<b>Dividing - partitioning</b>			
Dividing by using partitioning	1	Using partitioning to double or halve any number (up to 4-digits)	<ul style="list-style-type: none"> <li>• use models and diagrams to support partitioning to double or halve any number (up to 4-digits), eg 58 halved as half of 50 + half of 8, or double 58 as double 50 + double 8</li> </ul>
			<ul style="list-style-type: none"> <li>• explain the method used to double or halve</li> </ul>
	2	Using compensation to double or halve any number (up to 4-digits)	<ul style="list-style-type: none"> <li>• 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</li> </ul>
			<ul style="list-style-type: none"> <li>• explain the method used to double or halve</li> </ul>
	3	Using partitioning or compensation to double or halve any number (up to 4-digits)	<ul style="list-style-type: none"> <li>• use partitioning or compensation to double or halve any number (up to 4-digits)</li> </ul>
			<ul style="list-style-type: none"> <li>• compare the 2 methods and recognise numbers for which either method is more efficient or effective</li> <li>• explain the method used to double or halve</li> </ul>
Dividing 3 digits by 1 digit - partitioning	1	Dividing a 3-digit number by a 1-digit number using partitioning and using models for support	<ul style="list-style-type: none"> <li>• partition a 3-digit number to divide using models for support</li> </ul>
	2	Dividing a 3-digit number by a 1-digit number using partitioning	<ul style="list-style-type: none"> <li>• partition a 3-digit number to divide</li> </ul>
<b>Dividing by subtracting partial products</b>			
Dividing by subtracting partial products	1	Dividing by subtracting partial products	<ul style="list-style-type: none"> <li>• divide numbers by subtracting partial products</li> </ul>
<b>Dividing - area model</b>			
Dividing numbers with an area model	1	Dividing a 3-digit number by a 1-digit number using factorising using models	<ul style="list-style-type: none"> <li>• solve division problems by splitting factors, eg <math>125 \div 5</math> as <math>(100 \div 5) + (25 \div 5)</math> using models such as rectangular arrays, area models</li> </ul>
<b>Division problems - mixed method</b>			
Division problems- 2-digit number by 1-digit number	1	Solving problems involving division of a 2-digit number by a one-digit number, with no remainders	<ul style="list-style-type: none"> <li>• recognise and use different notations to indicate division</li> <li>• use the term 'quotient' to describe the result of a division calculation</li> <li>• check answers to mental calculations using digital technologies</li> <li>• use inverse operations to justify solutions to problems</li> </ul>
			<ul style="list-style-type: none"> <li>• use estimation to check the reasonableness of answers to division calculations</li> </ul>
	2	Solving problems involving division of a 2-digit number by a 1-digit number, with remainders	<ul style="list-style-type: none"> <li>• record remainders as fractions and decimals</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"><li>• explain why the remainder in a division calculation is always less than the number divided by (the divisor)</li><li>• check answers to mental calculations using digital technologies</li><li>• show the connection between division and multiplication where there is a remainder</li><li>• use estimation to check the reasonableness of answers to division calculations</li></ul>
Division problems: 3-digit number by 1-digit number	1	Solving problems involving the division of a number with 3 or more digits by 1 digit, with no remainder	• select and apply efficient mental and written strategies
			• divide the hundreds, then the tens, and then the ones
			• use the formal algorithm
			• check answers to mental calculations using digital technologies
			• use inverse operations to justify solutions to problems
	2	Solving problems involving the division of a number with 3 or more digits by 1 digit, with remainders	• use estimation to check the reasonableness of answers to division calculations
			• select and apply efficient mental and written strategies
			• divide the hundreds, then the tens, and then the ones
			• use the formal algorithm
			• 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 with multiples			
Dividing 2-digit multiples of 10	1	Representing and using known facts to divide two 2-digit multiples of 10	• represent with models/diagrams and use known facts and place value understanding to divide two 2-digit multiples of 10, eg using the known fact of $60 \div 2 = 30$ to solve $60 \div 20$ as $(60 \div 2) \div 10$
			• know that dividing by 10 shifts the digits 1 place to the right

Learning Journey	Steps	Content	Details
Dividing 2-digit multiples of 100	1	Representing and using known facts to divide two 2-digit multiples of 10 or 100	<ul style="list-style-type: none"><li>• represent with models/diagrams and use known facts and place value understanding to divide two 2-digit multiples of 10, eg using the known fact of <math>600 \div 2 = 300</math> to solve <math>600 \div 20</math> as <math>(600 \div 2) \div 10</math></li></ul>
			<ul style="list-style-type: none"><li>• know that dividing by 10 shifts the digits 1 place to the right and dividing by 100 shifts the digits 2 places to the right</li></ul>
Dividing with multiples of 1000	1	Using known facts divide 1-digit numbers with multiples of 1000	<ul style="list-style-type: none"><li>• use known facts and place value understanding to solve multiplication or division problems with multiples of 1000, eg <math>3 \times 6 = 18</math> so <math>3 \times 6000 = 18\,000</math></li></ul>
Division word problems			
Solving division word problems	1	Solving division word problems	<ul style="list-style-type: none"><li>• divide a number with 3 or more digits by a single-digit divisor</li></ul>
			<ul style="list-style-type: none"><li>• solve a division problem with and without remainders</li></ul>
			<ul style="list-style-type: none"><li>• use and interpret remainders in solutions to division problems</li></ul>
			<ul style="list-style-type: none"><li>• recognise when division is required to solve word problems</li></ul>
			<ul style="list-style-type: none"><li>• check answers to mental calculations using digital technologies</li></ul>
			<ul style="list-style-type: none"><li>• use inverse operations to justify solutions to problems</li></ul>
			<ul style="list-style-type: none"><li>• use estimation to check the reasonableness of answers to division calculations</li></ul>
Multiplying and dividing with multiples			
Multiplying and dividing 2-digit multiples of 10	1	Representing and using known facts to multiply or divide two 2-digit multiples of 10	<ul style="list-style-type: none"><li>• represent with models/diagrams and use known facts and place value understanding to multiply or divide two 2-digit multiples of 10, eg using the known fact of <math>60 \div 2 = 30</math> to solve <math>60 \div 20</math> as <math>(60 \div 2) \div 10</math></li></ul>
			<ul style="list-style-type: none"><li>• know that dividing by 10 shifts the digits 1 place to the right</li></ul>
	2	Representing and using known facts to multiply or divide two 2-digit multiples of 10 or 100	<ul style="list-style-type: none"><li>• represent with models/diagrams and use known facts and place value understanding to multiply or divide two 2-digit multiples of 10, eg using the known fact of <math>600 \div 2 = 300</math> to solve <math>600 \div 20</math> as <math>(600 \div 2) \div 10</math></li></ul>
			<ul style="list-style-type: none"><li>• know that dividing by 10 shifts the digits 1 place to the right and dividing by 100 shifts the digits 2 places to the right; 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</li></ul>



Learning Journey	Steps	Content	Details
Multiplying and dividing - multiples of 10 and 100	1	Using known facts to solve multiplication and division problems with multiples of 10 and 100	• use known facts and place value understanding to solve multiplication problems with multiples of 10 or 100, eg $3 \times 6 = 18$ so $3 \times 600 = 1800$
			• use known facts and place value understanding to solve division problems with multiples of 10 or 100, eg $18 \div 6 = 3$ so $1800 \div 600 = 3$
			• explain and justify the use of the strategy
Using known facts to solve problems			
Using known facts to solve problems	1	Solving calculations using related facts and reasoning	• use reasoning and known facts to solve related problems including the four operations, eg, $70 \div ? = 7$ ; $70 \div ? = 3.5$
	2	Comparing statements using $<$ , $>$ , or $=$ when multiplying by 10, 100 and 1000	• compare statements using $<$ , $>$ or $=$ when multiplying by 10, 100 and 1000 eg, $71 \times 1000 > 71 \times 100$
	3	Comparing statements when dividing by 10, 100 and 1000 using inequality symbols	• compare statements using $<$ , $>$ or $=$ when dividing by 10, 100 and 1000 , eg $57\ 000 \div 10$ [ ? ] $5700 \div 100$
	4	Comparing problems that involve 4-digit numbers by a 1-digit number using inequality symbols	• compare problems that involve 4-digit numbers by a 1-digit number using inequality symbols ( $<$ , $>$ or $=$ )
Using the 4 operations			
Equivalent number sentences	1	Using equivalent number sentences that involve more than 1 operation to find unknown quantities	• complete number sentences that involve more than 1 operation by calculating missing numbers, eg $5 \times ? = 4 \times 10$ , $5 \times ? = 30 - 10$
			• describe strategies for completing simple number sentences and justify solutions
			• check solutions to number sentences by substituting the solution into the original question
	2	Describing and using inverse operations to solve number sentences with whole numbers and any of the 4 operations	• identify and use inverse operations to assist with the solution of number sentences, eg $125 \div 5 = ?$ becomes $? \times 5 = 125$
			• describe how inverse operations can be used to solve a number sentence
			• check solutions to number sentences by substituting the solution into the original question
3	Finding the missing number in multiplication and division number sentences involving simple fractions or decimals	• complete number sentences involving multiplication and division, including those involving simple fractions or decimals, eg $7 \times ? = 7.7$	
		• check solutions to number sentences by substituting the solution into the original question	

Money			
Money (UK)			
Learning Journey	Steps	Content	Details
Using money (UK)	1	Using money: Multiplication and division problems   United Kingdom	• use multiplication and division to solve a variety of problems involving money 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
Money (US)			
Using money (US)	1	Using money: Multiplication and division problems (US currency)	• use multiplication and division to solve a variety of problems involving money and record the value using a decimal point and the symbol \$ (US currency)
			• use estimation to check the reasonableness of solutions to problems involving purchases and calculation of change (US currency)

Fractions			
Reading and writing fractions			
Learning Journey	Steps	Content	Details
Tenths and hundredths	1	Reading and writing tenths and hundredths	<ul style="list-style-type: none"><li>• read, write and represent tenths and hundredths in words, symbols and models, eg show 5 hundredths on a hundreds chart</li></ul>
	2	Connecting tenths and hundredths	<ul style="list-style-type: none"><li>• recognise that hundredths are tenths divided into 10 equal parts and that 10/100 is equal to 1/10</li></ul>
			<ul style="list-style-type: none"><li>• model and represent hundredths and tenths, eg 4/10 and 3/100 on a hundreds chart</li></ul>
Comparing fractions			
Comparing unit fractions	1	Comparing unit fractions with different denominators (denominators of 2, 3, 4, 5, 6, 8, 10, 12)	<ul style="list-style-type: none"><li>• model, compare and order common unit fractions</li></ul>
			<ul style="list-style-type: none"><li>• locate and represent unit fractions on a number line</li></ul>
			<ul style="list-style-type: none"><li>• compare the relative value of unit fractions by placing them on a number line between 0 and 1</li></ul>
			<ul style="list-style-type: none"><li>• investigate and explain the relationship between the value of a unit fraction and its denominator</li></ul>
Comparing and 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)	<ul style="list-style-type: none"><li>• compare and order proper fractions using a benchmark fraction for support, eg half or quarter</li></ul>
			<ul style="list-style-type: none"><li>• compare and order fractions using the relationship between the size of the denominator and the size of the parts</li></ul>

Learning Journey	Steps	Content	Details
			• record comparisons using $>$ , $<$ or $=$
			• recognise 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, eg half or quarter
			• record comparisons using $>$ , $<$ or $=$
	3	Using common denominators to compare and order proper fractions with related denominators	• recognise that comparisons are only valid when the 2 fractions refer to the same whole
			• find a common denominator to compare fractions
	Using common denominators to compare and order proper fractions with unrelated denominators	• compare and order using $<$ , $>$ , $=$	
		• find a common denominator to compare fractions	
			• compare and order using $<$ , $>$ , $=$
			• find a common denominator to compare fractions
Fractions on a number line	1	Comparing and ordering fractions with the same or related denominators up to 20 on a number line	• compare fractions with the same or related denominators using $<$ , $>$ or $=$
			• order fractions with the same or related denominators on a number line
Equivalent fractions			
Multiplication and equivalent fractions	1	Using multiplicative strategies to recognise 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 eg $\frac{1}{2} = ?/16$
	2	Using multiplicative strategies to recognise and find equivalent fractions greater than 1 with related denominators (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 eg 1 and $\frac{1}{2} = ?/16$
		• work with proper fractions, mixed numerals and improper fractions	
Comparing factors and products			
Comparing relative size of factors and products	1	Comparing the size of a product to the size of 1 factor based on the size of the other factor, without performing the indicated multiplication	• compare the size of a product to the size of 1 factor based on the size of the other factor, without performing the indicated multiplication

Learning Journey	Steps	Content	Details
<b>Converting fractions</b>			
Improper fractions to mixed numbers	1	Developing strategies to convert from improper fractions to mixed numerals using models and diagrams	<ul style="list-style-type: none"> <li>• express improper fractions as mixed numerals through the use of diagrams and number lines</li> <li>• develop strategies for converting between mixed numerals and improper fractions</li> <li>• connect equivalent fractions <math>&gt;1</math> to division with remainders, using the number line and other models, and hence move from these to improper and mixed fractions</li> </ul>
Mixed numbers to improper fractions	1	Developing strategies to convert from mixed numerals to improper fractions using models and diagrams	<ul style="list-style-type: none"> <li>• express mixed numerals as improper fractions through the use of diagrams and number lines</li> <li>• develop strategies, including multiplication strategies for converting between mixed numerals and improper fractions</li> </ul>
<b>Add and subtract fractions</b>			
Adding proper fractions	1	Adding proper fractions with the same denominator (denominators 2, 3, 4, 5, 6, 7, 8)	<ul style="list-style-type: none"> <li>• add proper fractions with the same denominator</li> <li>• model and represent strategies, including using diagrams and written representations</li> </ul>
Subtracting proper fractions	1	Subtracting proper fractions with the same denominator (denominators 2, 3, 4, 5, 6, 7, 8)	<ul style="list-style-type: none"> <li>• subtract proper fractions with the same denominator</li> <li>• model and represent strategies, including using diagrams and written representations</li> </ul>
Adding and subtracting proper fractions	1	Adding and subtracting proper fractions with unrelated denominators and answers less than 1 whole	<ul style="list-style-type: none"> <li>• add and subtract proper fractions where the denominators are unrelated</li> <li>• model and represent strategies, including using diagrams and written representations</li> <li>• use knowledge of equivalence to simplify answers when adding and subtracting fractions</li> </ul>
	2	Adding and subtracting proper fractions with the same denominator (denominators 2, 3, 4, 5, 6, 7, 8)	<ul style="list-style-type: none"> <li>• add and subtract proper fractions with the same denominator</li> <li>• model and represent strategies, including using diagrams and written representations</li> </ul>
Add 3 or more fractions	1	Adding 3 or more fractions where the denominators are multiples using models	<ul style="list-style-type: none"> <li>• add 3 or more fractions where the denominators are multiples using models eg, bar model</li> </ul>
Adding fractions with denominators of 10 and 100	1	Adding 2 fractions with respective denominators 10 and 100	<ul style="list-style-type: none"> <li>• express a fraction with denominator 10 as an equivalent fraction with denominator 100</li> <li>• add 2 fractions with respective denominators 10 and 100</li> </ul>

Learning Journey	Steps	Content	Details
Adding and subtracting mixed numbers			
Adding mixed numbers	1	Adding a whole number and a proper fraction	• add a whole number and a proper fraction
			• model and represent strategies, including using diagrams and written representations
	2	Adding mixed numerals with the same denominator	• add mixed numerals with the same denominator
			• model and represent strategies, including using diagrams and written representations
Subtracting mixed numbers (same denominator)	1	Subtracting fractions from 1 using models	• subtract fractions from one whole using models (part-whole, bar model, number line) eg, $1 - \frac{2}{8} =$
	2	Subtracting a proper fraction from a whole number	• use diagrams, and mental and written strategies, to subtract a proper fraction from any whole number including 1
			• model and represent strategies, including using diagrams and written representations
		Subtracting mixed numerals with the same denominator	• subtract mixed numerals with the same denominator
			• model and represent strategies, including using diagrams and written representations
	3	Subtracting fractions and mixed numbers with the same denominator	• use models to subtract 2 or more fractions and mixed numbers with the same denominator
			• subtract fractions and mixed numbers with the same denominator without models
• solve problems involving subtracting fractions and mixed numbers with the same denominator			
Subtracting mixed numbers (related denominator)	1	Subtracting mixed numbers with related denominators	• subtract mixed numbers with related denominators
Fractions: Addition/subtraction patterns			
Number patterns: adding and subtracting fractions	1	Describing, continuing and creating patterns resulting from addition and subtraction including fractions	• identify, continue and create simple number patterns involving addition and subtraction including fractions
			• describe patterns using the terms 'increase' and 'decrease', eg 'The terms decrease by $\frac{1}{4}$ '
			• create, with materials or digital technologies, a variety of patterns using fractions eg $\frac{1}{4}$ , $\frac{2}{4}$ , $\frac{3}{4}$ , $\frac{4}{4}$ , $\frac{5}{4}$ , $\frac{6}{4}$ , ...
			• use a number line or other diagram to create patterns involving fractions
			• find missing terms in a number sequence

Learning Journey	Steps	Content	Details
<b>Calculating amounts of fractions</b>			
Calculate fractions of a quantity or amount	1	Finding a simple fraction of a quantity with and without the use of digital technologies	<ul style="list-style-type: none"> <li>calculate a simple fraction of a collection/quantity, with and without the use of digital technologies</li> </ul>
	2	Finding a simple fraction of a quantity	<ul style="list-style-type: none"> <li>calculate a simple fraction of a collection/quantity</li> <li>explain how unit fractions can be used in the calculation of simple fractions of collections/quantities, eg 'To calculate <math>\frac{3}{8}</math> of a quantity, I found <math>\frac{1}{8}</math> of the collection first and then multiplied by 3'</li> </ul>
Fractions of amounts using bar modelling	1	Calculating fractions of amounts using bar models not exceeding 1000 (denominators 3–12)	<ul style="list-style-type: none"> <li>calculate the unit fraction of amounts using bar models, eg, <math>\frac{1}{5}</math> of 600 = ?</li> <li>calculate the whole amount from a proper fraction of amounts using bar models, eg <math>\frac{11}{5}</math> of 240 = ?</li> </ul>
	2	Calculating the whole from the known value of a fraction using bar models (denominators 3–12)	<ul style="list-style-type: none"> <li>calculate the whole from the known value of a unit fraction using bar models, eg, <math>\frac{1}{3}</math> of ? = \$60</li> <li>calculate the whole from the known value of a proper fraction of amounts using bar models, eg <math>\frac{3}{4}</math> of ? = 36</li> </ul>
<b>Dividing fractions using models</b>			
Dividing unit fractions by whole numbers, models	1	Dividing a unit fraction by a non-zero whole number using models or diagrams	<ul style="list-style-type: none"> <li>interpret division of a unit fraction by a non-zero whole number and compute such quotients</li> </ul>
		Dividing a unit fraction by a non-zero whole number	<ul style="list-style-type: none"> <li>divide a unit fraction by a non-zero whole number</li> </ul>
	2	Dividing a whole number by unit fraction using models and diagrams	<ul style="list-style-type: none"> <li>interpret division of a whole number by a unit fraction and compute such quotients</li> </ul>
	3	Dividing a whole number by a unit fraction	<ul style="list-style-type: none"> <li>divide a whole number by a unit fraction</li> </ul>
<b>Word problems and fractions</b>			
Word problems: dividing whole numbers by fractions	1	Solving real world problems involving division of whole numbers by unit fractions.	<ul style="list-style-type: none"> <li>solve real world problems involving division of whole numbers by unit fractions</li> </ul>
	2	Solving real world problems involving division of unit fractions by non-zero whole numbers	<ul style="list-style-type: none"> <li>solve real world problems involving division of unit fractions by non-zero whole numbers</li> </ul>
Word problems: non unit fractions	1	Solving word problems involving non-unit fractions	<ul style="list-style-type: none"> <li>find the whole given the non-unit fraction of a set</li> </ul>
			<ul style="list-style-type: none"> <li>solve word problems in different contexts, eg measurement</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• solve word problems involving fractions with different denominators eg <math>\frac{2}{5}</math> of the children have blue eyes, <math>\frac{2}{6}</math> have green eyes, if there are 30 children altogether how many children have brown eyes?</li> </ul>
Word problems: proper fractions & mixed numbers	1	Solving word problems involving both proper fractions and mixed numerals with the same denominator	<ul style="list-style-type: none"> <li>• solve word problems involving adding and subtracting fractions with the same denominator</li> <li>• model and represent strategies, including using diagrams and written representations</li> </ul>
	2	Solving real world problems involving multiplication of fractions and mixed numbers	<ul style="list-style-type: none"> <li>• solve real world problems involving multiplication of fractions and mixed numbers</li> </ul>
<b>2-step problems with fractions</b>			
fraction problems (no grouping symbols)	1	Calculating 2-step problems involving fractions and 1-digit numbers using the four operations (no grouping symbols)	<ul style="list-style-type: none"> <li>• combine the four operations when calculating fractions with related denominators using models, eg, <math>3\frac{1}{3} + \frac{1}{3} - 2 =</math></li> </ul>
fraction problems (grouping symbols)	1	Calculating 2-step problems involving fractions and 1-digit numbers using the four operations (grouping symbols)	<ul style="list-style-type: none"> <li>• combine the four operations when calculating fractions with related denominators using models, eg, <math>(\frac{2}{3} + \frac{2}{9}) \div 4 = \frac{2}{9}</math></li> </ul>
<b>Multiplication and scaling</b>			
Interpreting multiplying fractions as scaling	1	Interpreting multiplication of proper fractions as scaling	<ul style="list-style-type: none"> <li>• explain why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognising multiplication by whole numbers greater than 1 as a familiar case)</li> </ul>
			<ul style="list-style-type: none"> <li>• explain why multiplying a given number by a fraction less than 1 results in a product smaller than the given number</li> </ul>
			<ul style="list-style-type: none"> <li>• relate the principle of fraction equivalence <math>\frac{a}{b} = \frac{(n \times a)}{(n \times b)}</math> to the effect of multiplying <math>\frac{a}{b}</math> by 1</li> </ul>

Decimals			
Decimals to thousandths			
Learning Journey	Steps	Content	Details
Decimal thousandths	1	Introducing decimal thousandths	<ul style="list-style-type: none"> <li>• recognise that the place value system can be extended beyond hundredths</li> </ul>
			<ul style="list-style-type: none"> <li>• express thousandths as decimals</li> </ul>
			<ul style="list-style-type: none"> <li>• interpret decimal notation for thousandths, eg <math>0.123 = \frac{123}{1000}</math></li> </ul>
			<ul style="list-style-type: none"> <li>• state the place value of digits in decimal numbers of up to 3 decimal places</li> </ul>
			<ul style="list-style-type: none"> <li>• model thousandths using concrete materials</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"><li>represent decimal fractions, eg as fractions (tenths, hundredths and thousandths), using concrete materials and in diagrams</li></ul>
Comparing and ordering decimals to thousandths	1	Comparing and ordering decimal fractions of up to 3 decimal places	<ul style="list-style-type: none"><li>place decimal numbers of up to 3 decimal places on a number line between 0 and 1</li></ul>
			<ul style="list-style-type: none"><li>compare and order decimals with 3 decimal places using <math>&gt;</math>, <math>&lt;</math> and <math>=</math></li></ul>
			<ul style="list-style-type: none"><li>compare and order decimals with a different number of decimal places, up to 3 decimal places</li></ul>
Rounding decimals	1	Round decimals to hundredths	<ul style="list-style-type: none"><li>round decimal thousandths to the nearest hundredth</li></ul>
	2	Round decimals to tenths or hundredths	<ul style="list-style-type: none"><li>round decimal thousandths to the nearest tenths or hundredths</li></ul>
Common fraction and decimal equivalences	1	Knowing common fraction and decimal equivalences	<ul style="list-style-type: none"><li>know fraction and decimal equivalences for thirds, quarters, fifths and eighths</li></ul>
	2	Connecting fraction and decimal equivalences for $\frac{1}{2}$ , $\frac{1}{4}$ and $\frac{3}{4}$	<ul style="list-style-type: none"><li>connect fraction and decimal equivalences for <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math> and <math>\frac{3}{4}</math> using models, decimal and fraction notation</li></ul>
Partitioning decimal thousandths	1	Partitioning decimal thousandths	<ul style="list-style-type: none"><li>use place value to partition decimals of up to 3 decimal places</li></ul>
			<ul style="list-style-type: none"><li>partition decimals of up to 3 decimal places in non-standard forms</li></ul>
			<ul style="list-style-type: none"><li>partition fractions up to thousandths into decimals and fractions</li></ul>
Adding with decimals			
Adding decimals to hundredths	1	Adding decimals to hundredths	<ul style="list-style-type: none"><li>add a whole number and a decimal (to hundredths)</li></ul>
			<ul style="list-style-type: none"><li>add 2 decimal numbers in tenths</li></ul>
			<ul style="list-style-type: none"><li>add 2 decimal numbers in hundredths</li></ul>
			<ul style="list-style-type: none"><li>add decimal numbers to 2 places (mixed place value)</li></ul>
Subtracting with decimals			
Subtracting decimals to hundredths	1	Subtracting decimals to hundredths	<ul style="list-style-type: none"><li>subtract a decimal up to the hundredths place from a whole number</li></ul>
			<ul style="list-style-type: none"><li>subtract 2 decimal numbers in tenths</li></ul>
			<ul style="list-style-type: none"><li>subtract 2 decimal numbers in hundredths</li></ul>
			<ul style="list-style-type: none"><li>subtract 2 decimal numbers to 2 places (mixed place value)</li></ul>
Subtract decimals with 3 decimal places	1	Subtracting decimals with 3 decimal places using bridging to 10 and models	<ul style="list-style-type: none"><li>apply bridging to 10 to subtract decimals and whole numbers eg, <math>3.8 - 0.5</math> as <math>3.8 - 0.2 - 0.3</math></li></ul>
	2	Subtracting decimals with 3 decimal places using rounding and compensating and models	<ul style="list-style-type: none"><li>apply rounding and compensating to subtract decimals and whole numbers eg, <math>9.9 - 5.2</math> as <math>10 - 5.2 = 4.8</math>, <math>4.8 - 0.1 = 4.7</math></li></ul>



Learning Journey	Steps	Content	Details
Subtract decimals in different place values	1	Subtracting decimals in different place values	<ul style="list-style-type: none"><li>• subtract numbers with different numbers of decimal places eg, <math>4.543 - 2.34</math></li></ul>
Decimals: Addition/subtraction patterns			
Decimals: Addition/subtraction patterns	1	Describing, continuing and creating patterns resulting from addition and subtraction including decimals	<ul style="list-style-type: none"><li>• identify, continue and create simple number patterns involving addition and subtraction including decimals</li></ul>
			<ul style="list-style-type: none"><li>• describe patterns using the terms 'increase' and 'decrease', eg for the pattern 4.8, 4.1, 3.4, 2.7, ..., 'The terms decrease by 0.7'</li></ul>
			<ul style="list-style-type: none"><li>• create, with materials or digital technologies, a variety of patterns using decimals, eg 2.2, 2.0, 1.8, 1.6, ...</li></ul>
			<ul style="list-style-type: none"><li>• use a number line or other diagram to create patterns involving decimals</li></ul>
			<ul style="list-style-type: none"><li>• find missing terms in a number sequence</li></ul>
Adding and subtracting with decimals			
Adding and subtracting wholes and decimals	1	Adding a decimal number up to 3 decimal places to a whole number	<ul style="list-style-type: none"><li>• add a decimal number and whole numbers eg, <math>143.0 + 1.34</math></li></ul>
	2	Subtracting decimal numbers up to 3 decimal places from a whole number	<ul style="list-style-type: none"><li>• subtract decimal numbers from whole numbers eg, <math>12.0 - 1.3</math></li></ul>
Multiplying with decimals			
Introducing multiplying with decimals	1	Representing multiplication of decimals to tenths and whole numbers using objects and pictorial models, including area models	<ul style="list-style-type: none"><li>• represent multiplication of decimals to tenths and whole numbers using objects and pictorial models, including area models</li></ul>
	2	Representing multiplication of decimals or decimals and whole numbers with products to the tenths using objects and pictorial models, including area models	<ul style="list-style-type: none"><li>• represent multiplication of decimals with products to the tenths using objects and pictorial models, including area models</li></ul>
	3	Representing multiplication of decimals with products to the hundredths using objects and pictorial models, including area models	<ul style="list-style-type: none"><li>• represent multiplication of decimals with products to the hundredths using objects and pictorial models, including area models</li></ul>
	4	Multiplying tenths and whole numbers using mental strategies	<ul style="list-style-type: none"><li>• use efficient mental strategies to multiply tenths and whole numbers</li></ul>
Multiplying decimals up to 2 places	1	Multiplying decimals up to 2 places using the standard algorithm	<ul style="list-style-type: none"><li>• multiply a whole number and a decimal up to hundredths</li></ul>
			<ul style="list-style-type: none"><li>• multiply 2 decimal numbers in tenths</li></ul>
			<ul style="list-style-type: none"><li>• multiply 2 decimal numbers in hundredths</li></ul>
			<ul style="list-style-type: none"><li>• multiply 2 decimal numbers up to 2 places</li></ul>

Learning Journey	Steps	Content	Details
<b>Dividing with decimals</b>			
Dividing numbers by 10	1	Dividing 1-digit numbers by 10 (decimal answers)	<ul style="list-style-type: none"> <li>• divide 1-digit numbers by 10 and demonstrate that the answer is 10 times smaller by using place value models (Gattegno chart and place value model) eg, <math>7 \div 10 = 0.7</math></li> </ul>
	2	Dividing 2-digit numbers by 10 (decimal answers)	<ul style="list-style-type: none"> <li>• divide 2-digit numbers by 10 and demonstrate that the answer is 10 times smaller by using place value models (Gattegno chart and place value model) eg, <math>72 \div 10 = 7.2</math></li> </ul>
Dividing numbers by 100	1	Dividing 1- or 2- digit numbers by 100 using models	<ul style="list-style-type: none"> <li>• use models to divide whole numbers by 100, eg, <math>7,000 \div 100</math>, <math>700 \div 100</math>, <math>70 \div 100</math>, <math>7 \div 100</math> (place value tables and number sentences)</li> </ul>
Dividing whole numbers and decimals up to 2 places	1	Dividing whole numbers and decimals up to 2 places using the standard algorithm	<ul style="list-style-type: none"> <li>• divide whole numbers by decimals up to 2 places</li> </ul>
			<ul style="list-style-type: none"> <li>• divide a decimal number up to hundredths by another decimal number up to hundredths</li> </ul>
Decimal sequences	1	Identifying and creating simple rules for decimal sequences	<ul style="list-style-type: none"> <li>• identify and create simple rules for decimal sequences eg, add 0.15</li> </ul>

## 11 Measurement

Length			
Length - metric measures			
Learning Journey	Steps	Content	Details
Converting length (km and m)	1	Converting between kilometres and metres (whole numbers only)	• describe 1 km as 1000 m
			• convert between kilometres and metres 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 length (m and mm)	1	Converting between metres and millimetres (whole numbers only)	• describe 1 metre as 1000 millimetres
			• convert between millimetres and metres using whole numbers and record measurement equivalents in a two-column table
			• explain the relationship between the size of a unit and the number of units needed
Comparing metric lengths	1	Comparing lengths in metres and kilometres	• compare lengths and distances using metres and kilometres with the symbols $<$ $>$ $=$
	2	Comparing lengths in metres and kilometres, up to 10 km using inequality symbols (whole numbers only)	• compare lengths in metres and kilometres, up to 10 km using inequality symbols
	3	Comparing lengths in millimetres, centimetres, metres and kilometres	• compare lengths and distances using millimetres, centimetres, metres and kilometres using symbols $<$ , $>$ , $=$
Ordering lengths	1	Ordering lengths in metres and kilometres	• order lengths and distances using metres and kilometres
	2	Ordering lengths in millimetres, centimetres, metres and kilometres	• order lengths and distances using millimetres, centimetres, metres and kilometres
Recording length in mixed units	1	Recording lengths using mixed units	• record lengths and distances using combinations of millimetres, centimetres, metres and kilometres
Decimal notation and the metric system			
Decimal notation and the metric system	1	Recording kilometres and metres using decimal notation	• record lengths and distances using decimal notation to 3 decimal places
	2	Connecting decimal representations to the metric system	• recognise the equivalence of whole-number and decimal representations of measurements of length
			• interpret decimal notation for lengths and distances involving millimetres, centimetres, metres and kilometres
Converting units of length to 1 decimal place	1	Converting between standard metric units of length to 1 decimal place	• understand the meaning of metric prefixes, eg kilo-, centi- and milli-

Learning Journey	Steps	Content	Details
			• convert between centimetres and metres and vice versa
			• convert between centimetres and millimetres and vice versa
			• convert between metres and kilo- metres and vice versa
			• convert among millimetres, cen- timetres, metres and kilometres
			• explain and use the relationship be- tween the size of a unit and the num- ber of units needed to assist in deter- mining whether multiplication or divi- sion is required when converting be- tween units
Length - customary units			
Miles and kilometres	1	Converting between imperial and metric units of length (miles and kilometres)	• convert between imperial and met- ric units of length (miles and kilome- tres) including real-world examples
Converting customary units of length	1	Converting between customary units of length	• convert between customary units of length
	2	Converting between imperial units of length (feet and inches)	• convert between imperial units of length (feet and inches) including real-world examples
Length - customary and metric units			
Converting customary and metric units of length	1	Converting informally between metric and imperial units of length	• understand and use approximate equivalences between metric units and common imperial units such as centimetres and inches, feet and me- tres, kilometres and miles
	2	Converting between imperial and metric units of length (inches and centimetres)	• convert between imperial and met- ric units of length (inches and cen- timetres) including real-world exam- ples
Real world conversions	1	Using conversions in real-world multi-step problems	• use conversions in real-world multi- step problems

Mixed metric measures			
Learning Journey	Steps	Content	Details
Metric measures	1	Recognising suitable metric measures for length, mass and capacity	<ul style="list-style-type: none"> <li>• recognise the most appropriate unit of measure (cm, kg, km, g, tonnes, mL, mm, L)</li> <li>• recognise the most appropriate measurement eg 5 mm, 5 cm, 5 m, 5 km (including simple fractions and decimals)</li> </ul>
	2	Solving measurement problems where conversion is required for all metric units	<ul style="list-style-type: none"> <li>• solve measurement problems where conversion is required for all metric units</li> </ul>

Perimeter			
Perimeter			
Learning Journey	Steps	Content	Details
Perimeter on a grid	1	Calculating the perimeter of rectilinear shapes on a grid (informal units)	<ul style="list-style-type: none"> <li>calculate the perimeter of rectilinear shapes by counting squares on a grid</li> </ul>
	2	Solving problems involving perimeters on a grid	<ul style="list-style-type: none"> <li>solve problems involving perimeter (informal units) eg, which shape has the longest perimeter, create a shape with the longest/shortest perimeter</li> </ul>
Finding the perimeter of rectangles	1	Calculating the perimeters of rectangles	<ul style="list-style-type: none"> <li>use the term 'dimensions' to describe the 'lengths' and 'widths' of rectangles and squares</li> </ul>
			<ul style="list-style-type: none"> <li>measure and calculate the perimeter of a large rectangular section of the school</li> </ul>
			<ul style="list-style-type: none"> <li>recognise that rectangles with the same perimeter may have different dimensions</li> </ul>
			<ul style="list-style-type: none"> <li>recognise that rectangles with dimensions given in different units may have the same perimeter</li> </ul>
			<ul style="list-style-type: none"> <li>explore different methods of finding the perimeter of rectangles</li> </ul>
			<ul style="list-style-type: none"> <li>create a rule to find the perimeter of any rectangle</li> </ul>
Finding the perimeter of common 2D shapes	1	Calculating the perimeters of common two-dimensional shapes	<ul style="list-style-type: none"> <li>explain that the perimeters of two-dimensional shapes can be determined by calculating the sum of all the side lengths</li> </ul>
			<ul style="list-style-type: none"> <li>record calculations used to find the perimeters of two-dimensional shapes</li> </ul>
			<ul style="list-style-type: none"> <li>find the length of 1 unknown side of a shape given the perimeter</li> </ul>
Finding the perimeter of polygons	1	Calculating the perimeters of regular polygons	<ul style="list-style-type: none"> <li>explain the relationship between the lengths of the sides and the perimeters for polygons (including equilateral triangles and squares)</li> </ul>
			<ul style="list-style-type: none"> <li>record calculations used to find the perimeters of two-dimensional shapes</li> </ul>
			<ul style="list-style-type: none"> <li>find the length of 1 unknown side of a shape given the perimeter</li> </ul>
Calculating perimeter of composite shapes	1	Calculating the perimeters of composite rectilinear shapes	<ul style="list-style-type: none"> <li>explain that the perimeters of composite rectilinear shapes can be determined by calculating the sum of all the side lengths</li> </ul>
			<ul style="list-style-type: none"> <li>calculate the lengths of any unknown side lengths using lengths of other sides</li> </ul>
			<ul style="list-style-type: none"> <li>record calculations used to find the perimeters of composite rectilinear shapes</li> </ul>

Learning Journey	Steps	Content	Details
	2	Calculating the perimeter of rectilinear shapes using a formula	<ul style="list-style-type: none"> <li>calculate the perimeters of rectilinear shapes using a formula</li> </ul>
Finding a missing side length given the perimeter	1	Calculating the side length of a rectangle given the perimeter	<ul style="list-style-type: none"> <li>find the length of 1 unknown side of a rectangle given the perimeter</li> <li>find possible length combinations of 2 unknown sides of a rectangle given the perimeter</li> </ul>
Calculating perimeter (metric and customary units)	1	Applying the formula for the perimeter of a rectangle (metric and customary units)	<ul style="list-style-type: none"> <li>apply the formula for perimeter of a rectangle to find the perimeter of rectangles given 2 side lengths measured in the same units (metric and customary units)</li> <li>find the width or length of a rectangle given the perimeter and the measure of the other side</li> </ul>
	2	Solving word problems involving the perimeter of a rectangle (metric and customary units)	<ul style="list-style-type: none"> <li>solve word problems involving the perimeter of a rectangle (metric and customary units)</li> </ul>

Area			
Area (metric units)			
Learning Journey	Steps	Content	Details
Area formula (metric)	1	Developing a multiplicative formula for area of a rectangle using metric units	<ul style="list-style-type: none"> <li>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, eg Area of rectangle = length x width</li> <li>calculate the area of a rectangle by multiplying the length and width of the rectangle</li> <li>calculate a side length of the rectangle given its area and one other side length</li> <li>explain methods for finding the area of a square as a type of rectangle; connect multiplying equal sides to the concept of square numbers</li> </ul>
Area and perimeter of rectangles	1	Using area models and the distributive law to find the area of a rectangle	<ul style="list-style-type: none"> <li>use area models and the distributive law to find the area of a rectangle</li> </ul>
	2	Calculating the area and perimeter of rectilinear shapes	<ul style="list-style-type: none"> <li>calculate the area and perimeter of rectilinear shapes</li> </ul>
Area of a triangle	1	Estimating the area of a triangle by counting the number of squares (cm <sup>2</sup> )	<ul style="list-style-type: none"> <li>estimate the area of a triangle by counting the number of squares (cm<sup>2</sup>)</li> </ul>

Learning Journey	Steps	Content	Details
Area (customary units)			
Area formula using customary units	1	Developing a multiplicative formula for area of a rectangle using customary 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, eg 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
Exploring area			
Find the area of a rectangle with fractional sides	1	Finding the area of a rectangle with fractional side lengths by tiling	• tile a rectangle with unit squares of the appropriate unit fraction of the side lengths; recognise that the area is the same as would be found by multiplying the side lengths
			• multiply fractional side lengths to find areas of rectangles
			• represent fraction products as rectangular areas
Exploring shapes with the same area	1	Exploring rectilinear shapes with the same area	• sort rectilinear shapes with the same area
			• draw rectilinear shapes with the same area

<b>Volume and capacity</b>			
<b>Volume and capacity (cubic cm)</b>			
Learning Journey	Steps	Content	Details
Measuring with cm <sup>3</sup>	1	Using cubic centimetres to measure volume	<ul style="list-style-type: none"> <li>measure the volumes of rectangular containers by packing them with cubic-centimetre blocks</li> </ul>
			<ul style="list-style-type: none"> <li>explain the advantages and disadvantages of using cubic-centimetre blocks as a unit to measure volume</li> </ul>
			<ul style="list-style-type: none"> <li>describe arrangements of cubic-centimetre blocks in containers in terms of layers</li> </ul>
			<ul style="list-style-type: none"> <li>connect the layers of blocks with multiplying the dimensions</li> </ul>
Measuring with m <sup>3</sup>	1	Introducing formal units for volume: cubic metres	<ul style="list-style-type: none"> <li>recognise the need for a formal unit larger than the cubic centimetre</li> </ul>
			<ul style="list-style-type: none"> <li>construct and use the cubic metre as a unit to measure larger volumes</li> </ul>
			<ul style="list-style-type: none"> <li>explain why volume is measured in cubic metres in certain situations, eg wood bark, soil or concrete; select and justify referents for cubic cm</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• recognise that a cubic metre can have dimensions other than a cube of side 1 metre</li> <li>• record volumes using the abbreviation for cubic metres (<math>\text{m}^3</math>)</li> <li>• estimate the size of a cubic metre, half a cubic metre and 2 cubic metres</li> </ul>
Measuring with $\text{m}^2$ and $\text{cm}^2$	1	Estimating volumes using cubic metres and cubic centimetres as referents	<ul style="list-style-type: none"> <li>• make appropriate estimations of volumes using cubic metres and cubic centimetres as referents</li> </ul>
<b>Volume and capacity (metric units)</b>			
Measuring volume (mL and L)	1	Selecting and justifying appropriate metric units to measure volume and capacity (mL and L)	<ul style="list-style-type: none"> <li>• select and use appropriate units to measure the capacities of a variety of containers</li> <li>• select and use appropriate units to estimate the volumes of a variety of objects</li> </ul>
Converting metric units of volume and capacity	1	Converting metric units of volume and capacity when the conversion factor is given	<ul style="list-style-type: none"> <li>• convert metric units of volume and capacity when conversion factor is given</li> </ul>
Estimate capacity (mL and L)	1	Estimating given capacities in millilitres and litres	<ul style="list-style-type: none"> <li>• make appropriate estimations of capacities using millilitres and litres</li> </ul>
<b>Volume and capacity (customary units)</b>			
Converting customary units of volume and capacity	1	Converting customary units of volume and capacity when the conversion factor is given	<ul style="list-style-type: none"> <li>• convert customary units of volume and capacity when the conversion factor is given</li> </ul>
	2	Converting between imperial units of capacity (gallons and pints)	<ul style="list-style-type: none"> <li>• convert between imperial units of capacity (gallons and pints) including real-world examples</li> </ul>
<b>Volume and capacity (customary and metric)</b>			
Convert between customary & metric units of volume	1	Converting informally between metric and customary units of volume and capacity	<ul style="list-style-type: none"> <li>• understand and use approximate equivalences between metric units and common customary units such as litres and pints</li> </ul>

Mass			
<b>Mass (metric units)</b>			
Learning Journey	Steps	Content	Details
The tonne	1	Introducing formal units for mass: the tonne	<ul style="list-style-type: none"> <li>• establish the need for formal units for very large masses and introduce tonnes, including that <math>1000 \text{ kg} = 1 \text{ tonne}</math></li> </ul>
			<ul style="list-style-type: none"> <li>• identify everyday situations where tonnes are an appropriate unit for measuring the mass</li> </ul>
			<ul style="list-style-type: none"> <li>• apply place value understanding to modelling, describing and recording metric units of measurement</li> </ul>
			<ul style="list-style-type: none"> <li>• introduce the abbreviation 't' for recording mass in tonnes and record masses using tonnes and kilograms, eg <math>1 \text{ t } 750 \text{ kg}</math></li> </ul>



Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>calculate the number of kilograms in a whole number of tonnes</li> <li>interpret simple fractions (<math>\frac{1}{4}</math>, <math>\frac{1}{2}</math>, <math>\frac{3}{4}</math>) of a tonne and relate these to the number of kilograms</li> </ul>
Convert mass up to 3 decimal places	1	Converting between metric units of mass up to 3 decimal places using knowledge of multiplying and dividing by 10, 100 and 1000	<ul style="list-style-type: none"> <li>convert between measures of length, mass and capacity using a table</li> </ul>
Comparing mass up to 3 decimal places	1	Comparing mixed metric units of mass up to 3 decimal places	<ul style="list-style-type: none"> <li>compare measures of length, mass and capacity</li> </ul>
Solving problems involving masses of the same unit	1	Solving problems involving masses of the same unit	<ul style="list-style-type: none"> <li>solve a variety of problems involving masses of the same unit</li> </ul>
Ordering units of mass	1	Ordering mixed metric units of mass up to 3 decimal places	<ul style="list-style-type: none"> <li>order measures of length, mass and capacity</li> </ul>
<b>Mass (customary units)</b>			
Converting between customary units of mass	1	Converting between customary units of mass	<ul style="list-style-type: none"> <li>convert between customary units of mass</li> </ul>
	2	Converting between imperial units of mass (pounds and ounces)	<ul style="list-style-type: none"> <li>convert between imperial units of mass (pounds and ounces) including real-world examples</li> </ul>
	3	Converting between imperial units of mass (stone and pounds)	<ul style="list-style-type: none"> <li>convert between imperial units of mass (stone and pounds) including real-world examples</li> </ul>

Time			
Reading time			
Learning Journey	Steps	Content	Details
Using 24-hour notation	1	Using 24-hour notation	<ul style="list-style-type: none"> <li>recognise 24-hour time notation as an alternative to 12-hour time notation</li> </ul>
			<ul style="list-style-type: none"> <li>describe familiar situations in which 24-hour time is used such as transport timetables, armed forces, on household appliances</li> </ul>
			<ul style="list-style-type: none"> <li>identify whether a time expressed in 24-hour time notation represents a time before or after midday/noon</li> </ul>
			<ul style="list-style-type: none"> <li>convert between 24-hour time notation and 12-hour time notation</li> </ul>
			<ul style="list-style-type: none"> <li>convert between analogue and 24-hour digital clocks</li> </ul>
			<ul style="list-style-type: none"> <li>record 24-hour time using necessary conventions</li> </ul>
			<ul style="list-style-type: none"> <li>read and write time on 24-hour digital clocks to the minute using the terms o'clock, past and to, including half-past, quarter past, and quarter to</li> </ul>

Learning Journey	Steps	Content	Details
Converting units of time	1	Converting between hours, minutes and seconds (whole numbers only)	• convert between hours and minutes and vice versa (whole numbers only)
			• convert between minutes and seconds and vice versa (whole numbers only)
			• convert between hours, minutes and seconds using whole numbers and record measurement equivalents in a two-column table
	2	Converting between hours, minutes and seconds (including quarter and half hours and minutes)	• convert between hours and minutes and vice versa, including quarter-hour, half-hour and three-quarter-hour conversions
			• convert between minutes and seconds and vice versa, including quarter minute, half minute, and three-quarter minute conversions
	3	Converting between units of time (including quarter and half hours and minutes)	• convert between weeks and days (whole number of weeks only)
			• convert between months and years (whole number of years only)
			• convert between all units of time using whole numbers and record measurement equivalents in a two-column table
	Understanding elapsed time	1	Calculating elapsed time
• estimate, measure and represent time intervals to the nearest second			
• use a stopwatch to measure, compare and order the duration of events			
• use start and finish times to calculate the elapsed time of events			
• select an appropriate unit to measure a particular period of time			

## 12 Geometry

2D shape			
Classifying 2D shape			
Learning Journey	Steps	Content	Details
Regular and irregular polygons	1	Sorting among polygons, regular polygons and other two-dimensional shapes	<ul style="list-style-type: none"> <li>• explain the difference between regular and irregular shapes</li> <li>• identify two-dimensional shapes that are not polygons</li> </ul>
Classifying triangles	1	Classifying triangles by their sides and angles	<ul style="list-style-type: none"> <li>• identify and name right-angled, equilateral, isosceles and scalene triangles</li> <li>• compare and describe features of the sides and angles of equilateral, isosceles and scalene triangles</li> <li>• identify triangles that are right-angled as well as scalene or isosceles</li> <li>• explore, by measurement, side and angle properties of equilateral, isosceles and scalene triangles</li> </ul>
Classifying quadrilaterals	1	Classifying quadrilaterals by their features	<ul style="list-style-type: none"> <li>• explore, by measurement angle properties of squares, rectangles, parallelograms and rhombuses</li> <li>• select and classify a two-dimensional shape from a description of its features including parallel and perpendicular lines</li> <li>• recognise that two-dimensional shapes can be classified in more than 1 way</li> <li>• explain the difference between regular and irregular shapes</li> </ul>
			<ul style="list-style-type: none"> <li>• classify two-dimensional figures in a hierarchy based on properties</li> <li>• interpret a hierarchy diagram of two-dimensional shapes and their properties</li> <li>• use Venn diagrams to record classifications</li> <li>• interpret classifications represented using Venn diagrams</li> </ul>
Classifying 2D figures in a hierarchy	1	Classifying two-dimensional figures in a hierarchy	<ul style="list-style-type: none"> <li>• classify two-dimensional figures in a hierarchy based on properties</li> <li>• interpret a hierarchy diagram of two-dimensional shapes and their properties</li> </ul>
Rotational symmetry			
Rotational symmetry	1	Recognising rotational symmetry in shapes and designs	<ul style="list-style-type: none"> <li>• establish and define that rotational symmetry occurs when a shape looks identical to the original after being turned less than a full turn</li> <li>• determine whether or not given shapes and designs have rotational symmetry</li> </ul>

Learning Journey	Steps	Content	Details
	2	Ordering of rotational symmetry	<ul style="list-style-type: none"> <li>• sort shapes according to whether they are rotationally symmetrical or not</li> </ul>
			<ul style="list-style-type: none"> <li>• define the order of rotational symmetry as the number of times the shape looks identical to the original as it rotates around the centre of symmetry</li> </ul>
			<ul style="list-style-type: none"> <li>• determine the order of rotational symmetry for given shapes and designs</li> </ul>
			<ul style="list-style-type: none"> <li>• compare order of rotational symmetry for odd and even sided regular polygons</li> </ul>

3D shape			
Classifying 3D shapes			
Learning Journey	Steps	Content	Details
Classifying prisms	1	Comparing, describing and naming prisms	• identify and determine the number of pairs of parallel faces of three-dimensional objects, eg 'A rectangular prism has three pairs of parallel faces'
			• identify the 'base' of prisms
			• recognise 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
			• recognise a cube as a special type of prism
Classifying pyramids	1	Comparing, describing and naming pyramids	• identify and determine the number of faces of three-dimensional objects
			• identify the 'base' of pyramids
			• recognise that the base of a pyramid is not always the face where the prism touches the ground
			• name pyramids according to the shape of their base, eg square pyramid
Nets of shapes			
Nets of prisms and pyramids	1	Connecting prisms and pyramids with their nets	• examine a diagram to determine whether it is or is not the net of a prism or pyramid
			• explain why a given net will not form a prism or pyramid
			• visualise and sketch nets for a given prism or pyramid
			• recognise whether a diagram is a net of a particular prism or pyramid

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• visualise and name prisms and pyramids, given diagrams of their nets</li> <li>• select the correct diagram of a net for a given prism or pyramid from a group of similar diagrams where the others are not valid nets of the object</li> </ul>
Connecting 3D objects with their nets	1	Connecting three-dimensional objects with their nets	<ul style="list-style-type: none"> <li>• examine a diagram to determine whether it is or is not the net of a closed three-dimensional object</li> <li>• explain why a given net will not form a closed three-dimensional object</li> <li>• visualise and sketch nets for given three-dimensional objects</li> <li>• recognise whether a diagram is a net of a particular three-dimensional object</li> <li>• visualise and name prisms and pyramids, given diagrams of their nets</li> <li>• select the correct diagram of a net for a given three-dimensional object (include other regular polyhedrons)</li> </ul>
Cross sections of 3D shapes			
Cross sections of prisms and pyramids	1	Investigating cross-sections of prisms and pyramids	<ul style="list-style-type: none"> <li>• recognise that prisms have a 'uniform cross-section' when the section is parallel to the base</li> <li>• recognise that the base of a prism is identical to the uniform cross-section of the prism</li> <li>• recognise that pyramids do not have a uniform cross-section when the section is parallel to the base</li> </ul>
	2	Investigating properties of prisms and pyramids	<ul style="list-style-type: none"> <li>• identify, describe and compare the properties of prisms and pyramids, including: number of faces, shape of faces, number and type of identical faces, number of vertices, number of edges</li> <li>• describe similarities and differences between prisms and pyramids, eg between a triangular prism and a hexagonal prism, between a rectangular prism and a rectangular(-based) pyramid</li> <li>• determine that the faces of prisms are always rectangles except the base faces, which may not be rectangles</li> <li>• determine that the faces of pyramids are always triangles except the base face, which may not be a triangle</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• use the term 'apex' to describe the highest point above the base of a pyramid or cone</li> </ul>

Angles			
Measuring and classifying angles			
Learning Journey	Steps	Content	Details
Formal units for angles	1	Using a circular protractor to understand a 1-degree angle as $\frac{1}{360}$ of a turn	<ul style="list-style-type: none"> <li>• use a circular protractor to understand a 1-degree angle as <math>\frac{1}{360}</math> of a turn</li> </ul>
Measure with a protractor	1	Measuring and estimating angles of up to 180° in degrees	<ul style="list-style-type: none"> <li>• measure angles of up to 180° using a protractor</li> <li>• estimate angles of up to 180° and check by measuring</li> </ul>
Classifying angles by size	1	Classifying angles by their size in degrees	<ul style="list-style-type: none"> <li>• connect the term 'right angle' with 90°, 'straight angle' with 180° and 'angle of revolution' with 360°</li> <li>• establish and recall the angle size in degrees for each of the classifications: acute, obtuse and reflex</li> <li>• classify angles with a specified size in degrees as acute, right, obtuse, straight, reflex or a revolution</li> <li>• draw angles that are acute, right, obtuse, straight, reflex or a revolution using a ruler only</li> </ul>
Finding the total of angles	1	Calculating angles that total 360° or a complete turn, using knowledge of a straight line	<ul style="list-style-type: none"> <li>• calculate pairs of angles that total a complete turn, eg, <math>x + 227^\circ = 133^\circ</math></li> <li>• calculate more than two angles that total a complete turn, eg, <math>115^\circ + x + 157^\circ = 360^\circ</math></li> </ul>
Investigating right angles	1	Investigating and relating right angles in other contexts	<ul style="list-style-type: none"> <li>• investigate right angles and degrees in right angles eg, 90° in a right angle, 180° in a straight line</li> </ul>

Position, movement and direction			
Transformations			
Learning Journey	Steps	Content	Details
One-step transformations	1	Defining transformations: One-step translations, reflections and rotations	<ul style="list-style-type: none"> <li>• define translations, reflections and rotations of shapes and describe the similarities and differences between the original shape and the transformed shape</li> <li>• identify the one-step transformation used to move a shape from 1 position to another</li> </ul>
	2	Identifying combinations of transformations	<ul style="list-style-type: none"> <li>• identify combinations of up to 3 transformations used to move a shape from 1 position to another</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>perform combinations of up to 3 transformations to move a shape from 1 position to another without the use of digital technology</li> <li>perform combinations of up to 3 transformations to move a shape from 1 position to another using digital technology</li> <li>explore the equivalence of one-step transformations and combinations of transformations used to move a shape from 1 position to another</li> </ul>
<b>Tessellations</b>			
Exploring tessellations	1	Recognising tessellations	<ul style="list-style-type: none"> <li>recognise and describe transformations in tessellating designs consisting of a single shape</li> <li>create and record tessellating designs using transformations on a single shape</li> <li>determine whether a shape will or will not tessellate</li> </ul>
<b>Compass directions</b>			
Using cardinal compass directions	1	Introducing intercardinal compass directions	<ul style="list-style-type: none"> <li>understand, locate and label the 4 intercardinal compass directions on a compass rose: north-east (NE), south-east (SE), south-west (SW) and north-west (NW)</li> <li>connect the 4 intercardinal compass directions to features of the local area from their particular location</li> <li>determine the direction of other cardinal and intercardinal compass directions when given one of the cardinal or intercardinal compass directions</li> </ul>
	2	Describing locations on maps using cardinal and intercardinal compass directions	<ul style="list-style-type: none"> <li>use the cardinal and intercardinal compass directions to describe the location of one feature in relation to another on a map that has an arrow representing north</li> </ul>
	3	Drawing routes on maps using cardinal and intercardinal compass directions	<ul style="list-style-type: none"> <li>draw a route on a map given a sequence of directions involving cardinal and intercardinal directions, and landmarks</li> <li>use cardinal and intercardinal directions, and landmarks, to describe a route between 2 locations on a map</li> </ul>
<b>Enlarging 2D shapes</b>			
Enlarging 2D shapes using scale factors	1	Enlarging 2D shapes	<ul style="list-style-type: none"> <li>enlarge a simple 2D shape using a centre of enlargement and a simple scale factor, eg 2, 3, 4, 5, 10</li> <li>recognise the simple scale factor used in an enlargement of a 2D shape.</li> </ul>

Learning Journey	Steps	Content	Details
<b>The Cartesian plane - first quadrant</b>			
The first quadrant	1	Using the Cartesian coordinate system in the first quadrant only	<ul style="list-style-type: none"> <li>● recognise that the axes are labelled x and y</li> <li>● locate and plot points on a Cartesian plane</li> </ul>
Plotting coordinates on a grid	1	Recording the position of points on a coordinate plane using x and y coordinates	● record the position of points on a Cartesian plane using x and y coordinates
	2	Plotting points in the Cartesian coordinate system in the first quadrant only	● plot points on a Cartesian plane using x and y coordinates
	3	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)
	4	Plotting points from coordinates to create a shape, first quadrant only	● plot a sequence of coordinates to create a shape in the first quadrant
Translation on a grid	1	Translating points on the Cartesian plane in the first quadrant only	<ul style="list-style-type: none"> <li>● follow two-step instructions to translate points or shapes on a Cartesian plane eg, 1 up 2 right</li> <li>● follow three step instructions to translate points or shapes on a Cartesian plane eg, 1 up 2 right, 1 up</li> </ul>
	2	Describing the translation and movement of points and shapes on the Cartesian plane	● describe the translation and movement of a point or shape on the Cartesian plane using specific language such as: left/right/up/down



## 13 Operations & Algebraic Thinking

Algebra			
Writing and interpreting expressions			
Learning Journey	Steps	Content	Details
Writing & interpreting expressions without solving	1	Writing and interpreting multi-step numerical expressions without solving	<ul style="list-style-type: none"> <li>• write simple expressions without evaluating them, eg express the calculation 'add 8 and 7, then multiply by 2' as <math>2 \times (8 + 7)</math></li> </ul>
Forming equations	1	Writing 1-step equations using variables (four operations)	<ul style="list-style-type: none"> <li>• write 1-step equations using variables to represent a word problem (four operations), eg <math>5 + y = 8</math></li> </ul>
	2	Writing 1-step expressions using variables (four operations)	<ul style="list-style-type: none"> <li>• write 1-step expressions using variables to represent a word problem (four operations) eg <math>5 + y</math></li> </ul>
Solve two-step equations	1	Matching 2-step equations to bar model representation	<ul style="list-style-type: none"> <li>• match 2-step equations to bar model representation</li> </ul>
	2	Solving 2-step equations using bar models	<ul style="list-style-type: none"> <li>• solve 2-step equations using bar models</li> </ul>
Find pairs of values	1	Finding values of a pair of variables using the four operations (positive whole numbers only)	<ul style="list-style-type: none"> <li>• find values of a pair of variables eg, <math>a + b = 6</math></li> </ul>
	2	Finding values of a pair of variables involving 2-step calculations using the four operations (positive whole numbers only)	<ul style="list-style-type: none"> <li>• find values of a pair of variables involving 2-step calculations eg, <math>7x + 4 = y</math></li> </ul>

## 14 Statistics and data

Data presentation			
Column graph			
Learning Journey	Steps	Content	Details
Interpreting data in column/bar graphs	1	Interpreting primary and secondary data in a column graph with many-to-one correspondence	● describe and interpret data presented in column graphs; ask and answer questions related to data in a column graph
			● determine the total number of data values represented in column graphs
			● identify and describe relationships that can be observed in a column graph; compare column graphs with other data displays
Line graph			
Draw line graphs and solve problems	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 line graph representing primary data; ask and answer questions related to the data in the display; draw conclusions
Use line graphs to solve problems	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
Dot plots?			
Reading and interpreting data in a dot plot	1	Representing and interpreting measurements on a line plot, including fractional amounts	● make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{1}{8}$ )
			● use operations on fractions for this grade to solve problems involving information presented in line plots

Learning Journey	Steps	Content	Details
	2	Reading and interpreting data in a dot plot	• describe and interpret data in a dot plot; ask and answer questions related to the data in the display; draw conclusions, eg 'The graph shows that the heights of all children in the class are between 125 cm and 154 cm'
			• determine the total number of data values represented in dot plots
			• identify and describe relationships that can be observed in data displays, eg 'There are four times as many children in Year 5 whose favourite food is noodles compared to children whose favourite food is chicken'
			• compare dot plots to other types of displays
	3	Constructing a dot plot	• represent numerical data in a dot plot, eg the number of siblings of each student in the class
			• interpret data in a dot plot; ask and answer questions related to the data in the display; draw conclusions, eg 'The graph shows that the heights of all children in the class are between 125 cm and 154 cm'
Pie charts			
Pie charts with simple percentages	1	Reading and interpreting sector/pie charts with simple percentages	• read data in a sector/pie chart segmented into tenths and with one-to-one correspondence; relate responses to percentages
			• interpret data in a pie graph; ask and answer questions related to the data in the display; draw conclusions
			• identify the whole from the parts and vice versa in a pie chart where each category value is a percentage that is a multiple of 10
Tables			
Read and interpret tables	1	Interpreting data and solving problems using data in tables	• describe and interpret data presented in tables, eg maximum and minimum values; total number of responses; differences between values
			• identify and describe relationships; draw conclusions and ask questions
			• interpret data presented in two-way tables that represent two categorical variables
			• ask and answer comparative and relational questions related to data in a two-way table
Two-way tables	1	Introducing and interpreting bivariate data and two-way tables	• interpret data presented in two-way tables that represent two categorical variables

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>ask and answer comparative and relational questions related to data in a two-way table</li> </ul>
	2	Representing bivariate data in a two-way table	<ul style="list-style-type: none"> <li>create a two-way table to organise data involving 2 categorical variables</li> </ul>
			<ul style="list-style-type: none"> <li>ask and answer comparative and relational questions related to data in a two-way table</li> </ul>
<b>Side-by-side column/bar graphs</b>			
Side-by-side column graphs	1	Introducing and interpreting side-by-side column graphs	<ul style="list-style-type: none"> <li>interpret side-by-side column graphs for 2 categorical variables, eg favourite television show of students in Year 1 compared to that of students in Year 6</li> </ul>
			<ul style="list-style-type: none"> <li>ask and answer comparative and relational questions related to data in a side-by-side column graph</li> </ul>
	2	Representing bivariate data in a side-by-side column graph	<ul style="list-style-type: none"> <li>construct a side by side column graph for two categorical variables eg favourite television show of students in Year 1 compared to that of students in Year 6</li> </ul>
			<ul style="list-style-type: none"> <li>ask and answer comparative and relational questions related to data in a side by side column graph</li> </ul>
<b>Interpreting data</b>			
Interpreting discrete & continuous secondary data	1	Interpreting discrete and continuous secondary data	<ul style="list-style-type: none"> <li>differentiate between first-hand and second-hand data</li> </ul>
			<ul style="list-style-type: none"> <li>read, interpret, and draw conclusions from secondary data presented in charts, tables, and graphs (including broken-line graphs)</li> </ul>
<b>Median</b>			
Understanding the median	1	Understanding the median	<ul style="list-style-type: none"> <li>explore a set of values in data displays and in lists with the aim of summarising all of the values with a single number</li> </ul>
			<ul style="list-style-type: none"> <li>organise values in order and find the middle number (median)</li> </ul>
			<ul style="list-style-type: none"> <li>decide if the median is the best representative number for the centre of data set; justify and discuss</li> </ul>
Calculating the median	1	Calculating the median	<ul style="list-style-type: none"> <li>organise values in order and find the middle number (median)</li> </ul>
<b>Mean</b>			
Understanding the mean	1	Understanding the mean	<ul style="list-style-type: none"> <li>explore a set of values in data displays and in lists with the aim of summarising all of the values with a single number</li> </ul>
			<ul style="list-style-type: none"> <li>calculate the mean for a small set of data that would produce a whole number</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• use the mean to describe the shape of the data set across its range of values, using charts, tables, and graphs (eg, 'The data values fall mainly into two groups on both sides of the mean.'; 'The set of data is not spread out evenly around the mean.')</li> <li>• decide if the mean is the best representative number for the centre of the data set; justify and discuss</li> </ul>
Calculating the mean	1	Calculating the mean	<ul style="list-style-type: none"> <li>• calculate the mean for a small set of data</li> </ul>
<b>Comparing measures of central tendency</b>			
Comparing measures of center and variation	1	Comparing measures of central tendency and spread across data sets and data displays	<ul style="list-style-type: none"> <li>• compare similarities and differences between two related sets of data, using a variety of strategies (eg, by representing the data using tally charts, stem-and-leaf plots, double bar graphs, or broken-line graphs; by determining measures of central tendency [ie, mean, median, and mode]; by describing the shape of a data set across its range of values).</li> </ul>

Probability and chance			
<b>Investigating chance experiments</b>			
Learning Journey	Steps	Content	Details
Investigating chance experiments	1	Investigating equally likely outcomes of chance experiments	<ul style="list-style-type: none"> <li>• recognise that outcomes are described as 'equally likely' when any 1 outcome has the same chance of occurring as any other outcome</li> </ul>
			<ul style="list-style-type: none"> <li>• list all possible outcomes (table, list, tree diagram) in chance experiments where each outcome is equally likely to occur</li> </ul>
			<ul style="list-style-type: none"> <li>• use the term 'probability' to describe the numerical value that represents the likelihood of an outcome of a chance experiment</li> </ul>
			<ul style="list-style-type: none"> <li>• represent probabilities of outcomes of chance experiments using fractions</li> </ul>
			<ul style="list-style-type: none"> <li>• determine the likelihood of winning simple games by considering the number of possible outcomes</li> </ul>
	2	Ordering chance outcomes in a probabilities range from 0 to 1	<ul style="list-style-type: none"> <li>• establish that the sum of the probabilities of the outcomes of any chance experiment is equal to 1</li> <li>• understand that the probability ranges cannot be less than 0 and greater than 1</li> <li>• order commonly used chance words on an interval from 0 ('impossible') to 1 ('certain')</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• describe events that are impossible and events that are certain as having a probability of 0 or 1 respectively</li> </ul>
			<ul style="list-style-type: none"> <li>• 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</li> </ul>
	3	Describing the chances of simple events occurring using familiar language and numeric benchmarks	<ul style="list-style-type: none"> <li>• create, order, describe and explain the likelihood of simple events using the language of probability and numeric benchmarks of 0, <math>\frac{1}{2}</math> and 1</li> </ul>

## Part IV

# Grade 6

## 15 Number

Number and place value			
Integers			
Learning Journey	Steps	Content	Details
Investigating integers	1	Investigating integers	<ul style="list-style-type: none"> <li>• recognise the location of negative whole numbers in relation to zero and place them on a number line</li> <li>• use the term 'integers' to describe positive and negative whole numbers and zero</li> <li>• investigate negative whole numbers and the number patterns created when counting backwards on a calculator</li> <li>• recognise that negative whole numbers can result from subtraction</li> </ul>
	2	Interpreting integers in context	<ul style="list-style-type: none"> <li>• use a model to interpret intervals across zero (in context)</li> </ul>
Prime and composite numbers			
Prime and composite numbers	1	Introducing prime and composite numbers	<ul style="list-style-type: none"> <li>• establish and define prime numbers</li> <li>• establish and define composite numbers</li> <li>• know and recall all prime numbers up to 19</li> </ul>
	2	Identifying prime and composite numbers	<ul style="list-style-type: none"> <li>• determine whether a number is prime, composite or neither</li> <li>• 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'</li> </ul>
Square and cube numbers			
Square numbers	1	Introducing square numbers	<ul style="list-style-type: none"> <li>• establish and define the concept of square numbers, including the index notation</li> <li>• generate square numbers up to at least 100</li> <li>• know and recall square numbers up to and including 100</li> </ul>
Cube numbers	1	Introducing cube numbers	<ul style="list-style-type: none"> <li>• establish and define the concept of cube numbers, including the index notation</li> <li>• generate cube numbers up to at least 125</li> <li>• know and recall cube numbers up to and including 125</li> </ul>

Learning Journey	Steps	Content	Details
	2	Describing cube numbers	• model cube numbers and record each number group in numerical and diagrammatic form
			• explain how cube numbers are created
			• explore cube numbers using cubes, grid paper or digital technologies
			• recognise and explain the relationship between the name 'cube' number and the way the pattern of numbers is created
Comparing square and cube numbers	1	Comparing square and cube numbers using inequality symbols	• compare square and cube numbers using inequality symbols (<, >, = ), eg, 3 cubed [ ? ] 4 squared
Number sequences			
Continuing and creating number sequences	1	Continuing and creating sequences involving whole numbers, fractions and decimals	• describe the rule used to create the sequence
			• continue and create number patterns, with and without the use of digital technologies, using whole numbers, fractions and decimals, eg $\frac{1}{4}$ , $\frac{1}{8}$ , 1/16, ... or 1.25, 2.5, 5 ...
			• describe how number patterns have been created and how they can be continued
			• create simple shape patterns using concrete materials
			• find missing terms in a number sequence
Introducing absolute value			
Introducing absolute value	1	Introducing absolute value	• understand the absolute value of a rational number as its distance from 0 on the number line
			• interpret absolute value as magnitude for a positive or negative quantity in a real-world situation, eg for an account balance of -3 dollars, write $ -3  = 3$ to describe the size of the debt in dollars
			• distinguish comparisons of absolute value from statements about order. For example, recognise that an account balance less than -30 dollars represents a debt greater than 30 dollars

Addition and subtraction			
Addition and subtraction word problems			
Learning Journey	Steps	Content	Details
Addition and subtraction word problems	1	Solving addition word problems involving numbers of any size	<ul style="list-style-type: none"> <li>select and apply efficient mental strategies to solve word problems</li> </ul>
			<ul style="list-style-type: none"> <li>select and apply efficient written strategies to solve word problems</li> </ul>



Learning Journey	Steps	Content	Details
			• use a calculator to solve word problems
			• interpret words that indicate the required operation
			• justify the choice of strategy for a given calculation
	2	Solving subtraction word problems involving decimals to hundredths (inclusive)	• select and apply efficient mental strategies to solve word problems
			• select and apply efficient written strategies to solve word problems
			• use a calculator to solve word problems
			• interpret words that indicate the required operation
			• justify the choice of strategy for a given calculation
	3	Solving word problems requiring both addition and subtraction involving numbers of any size	• select and apply efficient mental strategies to solve word problems
			• select and apply efficient written strategies to solve word problems
			• justify the use digital technologies to solve word problems
			• interpret words that indicate the required operation/s
			• justify the choice of strategy for a given calculation

Multiplication and division			
Multiplication - efficient strategies			
Learning Journey	Steps	Content	Details
Multiply up to 4 digits - efficient strategies	1	Selecting efficient strategies to multiply whole numbers of up to 4 digits by 1- and 2-digit numbers	• apply mental strategies
			• apply efficient use of formal algorithms
			• use digital technologies
			• estimate solutions to problems and check to justify solutions
Multiplying - expanded algorithm			
Multiply to a 4-digit number: expanded algorithm	1	Multiplying 4-digit numbers by 2-digit numbers using the contracted algorithm, without regrouping (regrouping only when adding the partial products)	• multiply the ones, then the tens, then the hundreds and then the thousands, without regrouping
			• check if a calculation is correct
Multiplying - contracted algorithm			
Multiply to a 4-digit number: contracted algorithm	1	Multiplying 4-digit numbers by 2-digit numbers using the contracted algorithm	• multiply the ones, then the tens, then the hundreds and then the thousands, with and without regrouping
			• use inverse operations or digital technologies to check solutions
Division - efficient strategies			
Division of up to 4 digits - efficient strategies	1	Selecting efficient strategies to divide whole numbers of up to 4 digits by a 1-digit divisor	• apply mental strategies
			• apply efficient use of formal algorithms

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• use digital technologies</li> <li>• estimate solutions to problems and check to justify solutions</li> </ul>
<b>Division - area model</b>			
Dividing up to 4-digits by 1 digit - area model	1	Dividing up to 4-digit numbers by 1-digit divisors using factorising (the distributive law) with models for support	<ul style="list-style-type: none"> <li>• solve division problems by splitting factors, eg <math>125 \div 5</math> as <math>(100 \div 5) + (25 \div 5)</math> using models</li> <li>• illustrate and explain the calculation using equations, rectangular arrays and/or area models</li> </ul>
<b>Division - extended method</b>			
Dividing 3-digits by 2-digits - extended method	1	Dividing a 3-digit number by a 2-digit divisor using the extended algorithm, no remainders or zeros in answers	• apply the written algorithm to divide a 3-digit number by a 2-digit number, without remainders and without zeros in the answer
Dividing 4-digits by 2-digits - extended method	1	Dividing a 4-digit number by a 2-digit divisor using the extended algorithm, no remainders or zeros in answers	• apply the written algorithm to divide a 4-digit number by a 2-digit number, without remainders and without zeros in the answer
<b>Division - contracted method</b>			
Dividing 3-digits by 2-digits - contracted method	1	Dividing a 3-digit number by a 2-digit divisor using the contracted algorithm, no remainders or zeros in answers	• apply the written algorithm to divide a 3-digit number by a 2-digit number, without remainders and without zeros in the answer
Dividing 4-digits by 2-digits - contracted method	1	Dividing up to a 4-digit number by a 2-digit divisor using the contracted algorithm, no remainders or zeroes in the answer	• apply the written algorithm to divide up to a 4-digit number by a 2-digit number
	2	Dividing up to a 4-digit number by a 2-digit divisor using the contracted algorithm, with remainders but without zeros in answers	• apply the written algorithm to divide up to a 4-digit number by a 2-digit number, with remainders and without zeros in the answer
	3	Dividing up to a 4-digit number by a 2-digit divisor using the contracted algorithm, with and without remainders and zeros in answers	• apply the written algorithm to divide up to a 4-digit number by a 2-digit number, with and without remainders and zeros in the answer
<b>Dividing using known facts</b>			
Dividing using known facts	1	Dividing using known facts	<ul style="list-style-type: none"> <li>• solve division problems using known division facts and multiplicative relationships, eg 81 divided by 3 must have a quotient that is 3 times the size of 81 divided by 9 so <math>81 \div 3 = 27</math></li> <li>• explain and justify the use of the strategy</li> </ul>
<b>Division - using factors</b>			
Using factors to divide	1	Dividing up to 4-digit numbers by 1-digit divisors using factorising (the distributive law)	<ul style="list-style-type: none"> <li>• solve division problems by splitting factors, eg <math>125 \div 5</math> as <math>(100 \div 5) + (25 \div 5)</math></li> <li>• explain and justify the use of the strategy</li> </ul>

Learning Journey	Steps	Content	Details
Dividing 4-digit numbers using factors	1	Dividing up to 4-digit numbers by 2-digit multiples of 10 divisors using factors with models	<ul style="list-style-type: none"> <li>• solve division problems by splitting factors, eg, <math>540 \div 20</math> as <math>540 \div 10 \div 2</math> using models</li> <li>• illustrate and explain the calculation using equations, rectangular arrays and/or area models</li> </ul>
<b>Divisibility tests</b>			
Divisibility tests for dividing by 2	1	Introducing divisibility tests for dividing by 2	<ul style="list-style-type: none"> <li>• determine that a number is divisible by 2 if it is an even number, ie the last digit is 0, 2, 4, 6 or 8</li> <li>• apply divisibility test to find multiples of 2</li> </ul>
Divisibility tests for dividing by 3	1	Introducing divisibility tests for dividing by 3	<ul style="list-style-type: none"> <li>• determine that a number is divisible by 3 if the sum of its digits can be divided by 3</li> <li>• apply divisibility test to find multiples of 3</li> </ul>
Divisibility tests for dividing by 4	1	Introducing divisibility tests for dividing by 4	<ul style="list-style-type: none"> <li>• determine that a number is divisible by 4 if the last 2 digits can be divided by 4</li> <li>• apply divisibility test to find multiples of 4</li> </ul>
Divisibility tests for dividing by 5	1	Introducing divisibility tests for dividing by 5	<ul style="list-style-type: none"> <li>• determine that a number is divisible by 5 if the last digit is 0 or 5</li> <li>• apply divisibility test to find multiples of 5</li> </ul>
Divisibility tests for dividing by 6	1	Introducing divisibility tests for dividing by 6	<ul style="list-style-type: none"> <li>• determine that a number is divisible by 6 if it is divisible by both 2 and 3, ie it is even and the sum of the digits can be divided by 3</li> <li>• apply divisibility test to find multiples of 6</li> </ul>
Divisibility tests for dividing by 8	1	Introducing divisibility tests for dividing by 8	<ul style="list-style-type: none"> <li>• determine that a number is divisible by 8 if the last 3 digits can be divided by 8</li> <li>• apply divisibility test to find multiples of 8</li> </ul>
Divisibility tests for dividing by 9	1	Introducing divisibility tests for dividing by 9	<ul style="list-style-type: none"> <li>• determine that a number is divisible by 9 if the sum of the digits can be divided by 9</li> <li>• apply divisibility test to find multiples of 9</li> </ul>
Divisibility tests for dividing by 10	1	Introducing divisibility tests for dividing by 10	<ul style="list-style-type: none"> <li>• determine that a number is divisible by 10 if the last digit is 0</li> <li>• apply divisibility test to find multiples of 10</li> </ul>
<b>Multiply and divide using multiples</b>			
Multiplying by multiples of 10, 100, 1000	1	Multiplying any numbers by 10, 100, 1000 and their multiples	• use mental strategies to multiply by 10, 100, 1000 and their multiples
		Using mental strategies to multiply 1-digit and 2-digit numbers by multiples of 10 000	• use mental strategies to multiply 1-digit and 2-digit numbers by multiples of 10 000

Learning Journey	Steps	Content	Details
Dividing by multiples of 10, 100, 1000	1	Dividing any numbers by 10, 100, 1000 and their multiples	<ul style="list-style-type: none"> <li>• use mental strategies to divide by 10, 100, 1000 and their multiples</li> </ul>
<b>Problem solving: multiplication/division</b>			
Solving multiplication and division word problems	1	Solving word problems involving multiplication and division	<ul style="list-style-type: none"> <li>• use appropriate language to compare quantities, eg 'twice as much', 'half as much'</li> <li>• use a table or similar organiser to record methods used to solve problems</li> </ul>
<b>Estimating quotients</b>			
Rounding to estimate	1	Rounding to estimate quotients	<ul style="list-style-type: none"> <li>• estimate quotients using rounding</li> </ul>
<b>Order of operations</b>			
Order of operations (add/subtract)	1	Introducing order of operations involving addition and subtraction	<ul style="list-style-type: none"> <li>• solve number sentences involving addition and subtraction</li> </ul>
Order of operations (multiply/divide)	1	Introducing order of operations involving multiplication and division	<ul style="list-style-type: none"> <li>• solve number sentences involving multiplication and division</li> </ul>
Order of operations (add/subtract/multiply/divide)	1	Introducing order of operations involving all 4 operations	<ul style="list-style-type: none"> <li>• solve number sentences involving all 4 operations</li> </ul>
Order of operations involving grouping symbols	1	Introducing order of operations involving grouping symbols	<ul style="list-style-type: none"> <li>• explore the use of brackets and the order of operations in number sentences</li> <li>• use the term 'operations' to describe collectively the processes of addition, subtraction, multiplication and division</li> <li>• recognise that the grouping symbols () and [] are used in number sentences to indicate operations that must be performed first</li> <li>• perform calculations involving grouping symbols without the use of digital technologies</li> </ul>
Applying order of operations (grouping symbols)	1	Applying order of operations for mixed operations and grouping symbols	<ul style="list-style-type: none"> <li>• apply the order of operations to perform calculations involving mixed operations and grouping symbols</li> <li>• investigate whether different digital technologies apply the order of operations</li> <li>• recognise when grouping symbols are not necessary</li> </ul>
	2	Introducing order of operations involving multiple grouping symbols	<ul style="list-style-type: none"> <li>• explore the use of multiple brackets and the order of operations in number sentences</li> <li>• recognise that the grouping symbols () and [] are used in number sentences to indicate operations that must be performed first</li> <li>• perform calculations involving grouping symbols without the use of digital technologies</li> </ul>

Fractions			
Understanding fractions			
Learning Journey	Steps	Content	Details
Compare and order fractions (same numerator)	1	Comparing and ordering proper fractions with the same numerators but different denominators (denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100)	• compare and order proper fractions using a benchmark fraction for support, eg half or quarter
			• compare and order fractions using the relationship between the size of the denominator and the size of the parts
			• record comparisons using $>$ , $<$ or $=$
			• recognise that comparisons are only valid when the 2 fractions refer to the same whole
Compare and order fractions	1	Comparing and ordering proper fractions with different numerators and denominators (denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100)	• compare and order proper fractions using a benchmark fraction for support, eg half or quarter
			• record comparisons using $>$ , $<$ or $=$
			• recognise that comparisons are only valid when the 2 fractions refer to the same whole
Equivalent fractions (related denominators)	1	Recognising and finding equivalent simple fractions with related denominators using multiplicative thinking (denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100)	• develop mental strategies for generating equivalent fractions, such as multiplying or dividing the numerator and the denominator by the same number
			• explain or demonstrate why 2 fractions are or are not equivalent
			• apply knowledge of equivalent fractions to convert between units of measurement
Simplifying fractions			
Simplify fractions using factors	1	Using common factors to simplify proper fractions to their simplest form	• determine a common factor of the numerator and denominator of a fractions and use to find an equivalent fraction. Repeat until the fraction is reduced to its simplest form
			• write a fraction in its simplest form using the highest common factor
			• know that a fraction is reduced to its simplest form when the only common factor of the numerator and denominator is 1
Adding fractions			
Adding fractions with related denominators	1	Adding proper fractions with related denominators and answers less than 1 whole	• add proper fractions where the denominators are related
			• model and represent strategies, including using diagrams and written representations
			• use knowledge of equivalence to simplify answers when adding fractions
	2	Adding simple fractions with related denominators	• add fractions where the denominators are related

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"><li>• use knowledge of equivalence to simplify answers when adding fractions</li><li>• where the answer is greater than 1 convert the fraction to a mixed numeral</li></ul>
Subtracting fractions			
Subtracting fractions with related denominators	1	Subtracting proper fractions with related denominators and answers less than 1 whole	• subtract proper fractions where the denominators are related
			• model and represent strategies, including using diagrams and written representations
			• use knowledge of equivalence to simplify answers when subtracting fractions
	2	Subtracting simple fractions with related denominators	• subtract fractions where the denominators are related
			• use knowledge of equivalence to simplify answers when subtracting fractions
			• where the answer is greater than 1 convert the fraction to a mixed numeral
Adding and subtracting fractions			
Adding and subtracting fractions	1	Adding and subtracting simple proper fractions in which 1 denominator is a multiple of another (denominators 2, 3, 4, 5, 6, 7, 8, 10, 12, 100)	• add and subtract proper fractions where 1 denominator is the same as, or a multiple of, the other
			• use knowledge of equivalence to simplify answers when adding and subtracting fractions
	2	Adding and subtracting proper fractions with related denominators and answers less than 1 whole	• add and subtract proper fractions where the denominators are related
			• model and represent strategies, including using diagrams and written representations
			• use knowledge of equivalence to simplify answers when adding and subtracting fractions
	Mixed numbers		
Add and subtract fractions and mixed numbers	1	Adding fractions, including mixed numerals, with related denominators	• add fractions, including mixed numerals, where the denominators are related
			• convert an answer that is an improper fraction to a mixed numeral
			• use knowledge of equivalence to simplify answers when adding fractions
			• recognise that improper fractions may sometimes make calculations involving mixed numerals easier
Subtract fractions (including mixed numbers)	1	Subtracting fractions, including mixed numerals, with related denominators	• subtract fractions, including mixed numerals, where the denominators are related

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• convert an answer that is an improper fraction to a mixed numeral</li> <li>• use knowledge of equivalence to simplify answers when subtracting fractions</li> <li>• recognise that improper fractions may sometimes make calculations involving mixed numerals easier</li> </ul>
Mixed addition and subtraction	1	Adding and subtracting fractions including mixed numerals, with related denominators	<ul style="list-style-type: none"> <li>• add and subtract fractions where the denominators are related</li> <li>• use knowledge of equivalence to simplify answers when adding and subtracting fractions</li> <li>• where the answer is greater than 1 convert the fraction to a mixed numeral</li> </ul>
<b>Adding fractions and mixed numbers</b>			
Adding mixed numbers: unrelated denominators	1	Adding fractions and mixed numerals with unrelated denominators	<ul style="list-style-type: none"> <li>• add fractions, including mixed numerals, where the denominators are unrelated by finding common denominators</li> <li>• model and represent strategies, including using diagrams and written representations</li> <li>• convert an answer that is an improper fraction to a mixed numeral</li> <li>• use knowledge of equivalence to simplify answers when adding fractions</li> <li>• recognise that improper fractions may sometimes make calculations involving mixed numerals easier</li> </ul>
<b>Subtracting fractions and mixed numbers</b>			
Subtracting mixed numbers: unrelated denominators	1	Subtracting fractions and mixed numerals with unrelated denominators	<ul style="list-style-type: none"> <li>• subtract fractions, including mixed numerals, where the denominators are unrelated by finding common denominators</li> <li>• model and represent strategies, including using diagrams and written representations</li> <li>• convert an answer that is an improper fraction to a mixed numeral</li> <li>• use knowledge of equivalence to simplify answers when subtracting fractions</li> <li>• recognise that improper fractions may sometimes make calculations involving mixed numerals easier</li> </ul>
<b>Add &amp; subtract fractions &amp; mixed numbers</b>			
Adding and subtracting fractions and mixed numbers	1	Adding and subtracting fractions and mixed numerals with unrelated denominators	<ul style="list-style-type: none"> <li>• add and subtract fractions, including mixed numerals, where the denominators are unrelated by finding common denominators</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• model and represent strategies, including using diagrams and written representations</li> <li>• convert an answer that is an improper fraction to a mixed numeral</li> <li>• use knowledge of equivalence to simplify answers when adding and subtracting fractions</li> <li>• recognise that improper fractions may sometimes make calculations involving mixed numerals easier</li> </ul>
<b>Multiply fractions by whole numbers</b>			
Multiply fractions by whole numbers using models	1	Multiplying unit fractions by whole numbers using models and diagrams	<ul style="list-style-type: none"> <li>• apply and extend previous understandings of multiplication to multiply a unit fraction by a whole number</li> <li>• use repeated addition to represent and multiply unit fractions by whole numbers, eg <math>\frac{1}{5} \times 3 = \frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \frac{3}{5}</math></li> <li>• develop a rule for multiplying unit fractions by whole numbers, eg multiply the numerator by the whole number</li> <li>• solve word problems involving multiplication of unit fractions by whole numbers, including area and length problems</li> </ul>
Multiply proper fractions by whole numbers	1	Multiplying proper fractions by whole numbers using models and diagrams	<ul style="list-style-type: none"> <li>• apply and extend previous understandings of multiplication to multiply a fraction by a whole number supported by models and/or diagrams, eg <math>\frac{2}{5} \times 3 = \frac{2}{5} + \frac{2}{5} + \frac{2}{5} = \frac{6}{5} = 1 \frac{1}{5}</math></li> <li>• use repeated addition to multiply simple fractions by whole numbers, eg <math>\frac{2}{5} \times 3 = \frac{2}{5} + \frac{2}{5} + \frac{2}{5} = \frac{6}{5} = 1 \frac{1}{5}</math></li> <li>• develop a rule for multiplying simple fractions by whole numbers, eg <math>\frac{2}{5} \times 3 = 2 \times \frac{3}{5} = \frac{6}{5} = 1 \frac{1}{5}</math></li> <li>• solve word problems involving multiplication of fractions by whole numbers, including area and length problems</li> </ul>
Multiplying a fraction by a whole number	1	Multiplying proper or improper fractions by whole numbers using models and diagrams	<ul style="list-style-type: none"> <li>• apply and extend previous understandings of multiplication to multiply a fraction by a whole number supported by models and/or diagrams, eg <math>\frac{2}{5} \times 3 = \frac{2}{5} + \frac{2}{5} + \frac{2}{5} = \frac{6}{5} = 1 \frac{1}{5}</math></li> </ul>



Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"><li>• apply and extend previous understandings of multiplication to multiply an improper fraction by a whole number supported by models and/or diagrams, eg <math>6/5 \times 3 = 6/5 + 6/5 + 6/5 = 18/5 = 3\ 3/5</math></li><li>• develop a rule for multiplying fractions by whole numbers eg multiply the numerator by the whole number</li><li>• solve word problems involving multiplication of fractions by whole numbers, including area and length problems</li></ul>
Multiply mixed numbers by integers	1	Multiplying mixed numerals by whole numbers using models and diagrams	<ul style="list-style-type: none"><li>• convert the mixed numeral to an improper fraction and then multiply by a whole number supported by models and/or diagrams, eg 1 and <math>2/3 \times 6</math> as <math>5/3 \times 6 = 30/3</math> or 10</li><li>• solve word problems involving multiplication of fractions by whole numbers, including area and length problems</li></ul>
Solving word problems with fractions			
Word problems using fractions & mixed numbers	1	Solving word problems involving fractions and mixed numerals with the related denominators	<ul style="list-style-type: none"><li>• solve word problems involving the addition and subtraction of fractions where 1 denominator is the same as, or a multiple of, the other</li></ul>
	2	Solving word problems involving fractions and mixed numerals with the unrelated denominators	<ul style="list-style-type: none"><li>• solve word problems involving the addition and subtraction of fractions with unrelated denominators</li></ul>
	3	Solving word problems involving non-unit fractions	<ul style="list-style-type: none"><li>• find the whole given the non-unit fraction of a set</li></ul>
			<ul style="list-style-type: none"><li>• solve word problems in different contexts, eg measurement</li><li>• solve word problems involving fractions with different denominators eg <math>2/5</math> of the children have blue eyes, <math>2/6</math> have green eyes, if there are 30 children altogether how many children have brown eyes?</li></ul>
4	Solving word problems involving fractions of a collection including mixed numerals, proper and improper fractions	<ul style="list-style-type: none"><li>• solve word problems involving a fraction of a collection/quantity</li></ul>	
Word problems: multiply fractions by whole numbers	1	Solving word problems involving multiplication of fractions by whole numbers using models and equations	<ul style="list-style-type: none"><li>• solve word problems involving multiplication of fractions by whole numbers using models</li></ul>
Using fractions as operators			
Using fractions as operators	1	Using fractions as operators	<ul style="list-style-type: none"><li>• link understanding of fractions of amounts and multiplying fractions to using fractions as operators</li></ul>
			<ul style="list-style-type: none"><li>• use knowledge of commutativity</li></ul>

Learning Journey	Steps	Content	Details
<b>Interpreting fractions as division</b>			
Interpreting fractions as division	1	Interpreting fractions as division	<ul style="list-style-type: none"> <li>• interpret a fraction as division of the numerator by the denominator (no decimals)</li> <li>• solve word problems involving division of whole numbers, using models to represent the problem, eg 3 pizzas shared equally among 4 people</li> </ul>
<b>Fractions: multiples of unit fractions</b>			
Fractions: multiples of unit fractions	1	Representing a fraction $a/b$ as $a \times 1/b$	<ul style="list-style-type: none"> <li>• represent a fraction <math>a/b</math> as <math>a \times 1/b</math></li> </ul>

<b>Decimals</b>			
<b>Decimal compliments to 1</b>			
Learning Journey	Steps	Content	Details
Investigating decimal complements of 1	1	Investigating decimal complements of 1	<ul style="list-style-type: none"> <li>• use addition and subtraction to explore decimal complements of 1, eg <math>0.83 + 0.17 = 1</math></li> </ul>
<b>Rounding decimals</b>			
Rounding decimals to any place	1	Rounding decimals to any place	<ul style="list-style-type: none"> <li>• use place value understanding to round decimals to any place</li> </ul>
<b>Adding decimals</b>			
Adding decimals up to 3 decimal places	1	Adding decimals to 3 decimal places using mental strategies	<ul style="list-style-type: none"> <li>• select and apply efficient mental strategies to solve addition problems, including compensation, bridging to 1, using place value</li> <li>• record strategies using numbers, models and diagrams</li> <li>• relate decimals to fractions to aid mental strategies</li> <li>• solve word problems using mental strategies, including problems involving measurement and money</li> </ul>
Adding decimals using written method	1	Adding decimals to 3 decimal places using a written method	<ul style="list-style-type: none"> <li>• use a standard algorithm to add decimals with the same number of decimal places</li> <li>• use a standard algorithm to add decimals with a different number of decimal places</li> <li>• use estimation and rounding to check the reasonableness of answers when adding decimals</li> </ul>
Adding decimals using digital technologies	1	Adding decimals using digital technologies	<ul style="list-style-type: none"> <li>• add decimals using digital technologies</li> <li>• use estimation and rounding to check the reasonableness of answers when adding decimals</li> <li>• interpret a calculator display in the context of the problem, eg 2.6 means \$2.60</li> <li>• solve word problems involving the addition of decimals, including those involving money and measurement</li> </ul>

Learning Journey	Steps	Content	Details
<b>Subtracting decimals</b>			
Subtracting decimals using mental strategies	1	Subtracting decimals using mental strategies	<ul style="list-style-type: none"> <li>• select and apply efficient mental strategies to solve subtraction problems, including compensation, bridging to 1, using place value</li> <li>• record strategies using numbers, models and diagrams</li> <li>• relate decimals to fractions to aid mental strategies</li> <li>• solve word problems using mental strategies, including problems involving measurement and money</li> </ul>
Subtracting decimals using digital technologies	1	Subtracting decimals using digital technologies	<ul style="list-style-type: none"> <li>• subtract decimals using digital technologies</li> <li>• use estimation and rounding to check the reasonableness of answers when subtracting decimals</li> <li>• interpret a calculator display in the context of the problem, eg 2.6 means \$2.60</li> <li>• solve word problems involving the subtraction of decimals, including those involving money and measurement</li> </ul>
Subtracting decimals using written method	1	Subtracting decimals to 3 decimal places using written method	<ul style="list-style-type: none"> <li>• use a standard algorithm to subtract decimals with the same number of decimal places</li> <li>• use a standard algorithm to subtract decimals with a different number of decimal places</li> <li>• use estimation and rounding to check the reasonableness of answers when subtracting decimals</li> </ul>
Subtracting decimals in the same place value	1	Subtracting decimals up to 3 decimal places with the same number of decimal places using place value partitioning and models	<ul style="list-style-type: none"> <li>• apply place value partitioning to subtract decimals and whole numbers eg, <math>6.4 - 5.2</math> as <math>6 - 5</math> and 4 tenths + 2 tenths</li> </ul>
<b>Multiplying decimals</b>			
Multiplying decimals and whole numbers	1	Multiplying hundredths and whole numbers using mental strategies	<ul style="list-style-type: none"> <li>• use efficient mental strategies to multiply hundredths and whole numbers</li> </ul>
Multiplying decimals up to 3 decimal places	1	Multiplying decimals of up to 3 decimal places using mental strategies	<ul style="list-style-type: none"> <li>• use mental strategies to multiply simple decimals by single-digit numbers, eg <math>3.5 \times 2</math></li> <li>• 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 <math>3 \times 1.25 = 3.75</math> m'</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• solve word problems involving the multiplication of decimals, including those involving money</li> <li>• use estimation and rounding to check the reasonableness of answers when multiplying decimals</li> </ul>
Multiplying decimals using written method	1	Multiplying decimals using written method	<ul style="list-style-type: none"> <li>• multiply decimals up to thousandths using a standard algorithm</li> </ul>
<b>Multiplying decimals by 10, 100 and 1000</b>			
Multiplying decimals by powers of 10	1	Multiplying decimals by 10	<ul style="list-style-type: none"> <li>• use PV equipment to multiply decimals by 10</li> <li>• recognise that the digits move one place to the left</li> <li>• use zero as a place holder</li> </ul>
Multiplying decimals by powers of 100	1	Multiplying decimals by 100	<ul style="list-style-type: none"> <li>• recognise that the digits move 2 places to the left</li> <li>• use zero as a place holder</li> <li>• use PV equipment to multiply decimals by 100</li> </ul>
Multiplying decimals by powers of 1000	1	Multiplying decimals by 1000	<ul style="list-style-type: none"> <li>• recognise that the digits move three places to the left</li> <li>• use zero as a place holder</li> <li>• use PV equipment to multiply decimals by 1000</li> </ul>
Multiplying decimals by powers of 10, 100, 1000	1	Multiplying decimals by 10, 100, 1000	<ul style="list-style-type: none"> <li>• multiply decimals by 10, 100, 1000</li> </ul>
<b>Multiplicative relationships</b>			
Multiplicative relationships with decimals	1	Relating multiplicative relationships using decimals	<ul style="list-style-type: none"> <li>• describe multiplicative relationships between quantities by using decimals, eg 'I have 1.5 time as many plums as you'</li> </ul>
<b>Dividing decimals</b>			
Divide decimals by integers	1	Dividing whole numbers and decimals of up to 2 decimal places using mental strategies	<ul style="list-style-type: none"> <li>• divide decimals by a one-digit whole number where the result is a terminating decimal, eg <math>5.25 \div 5 = 1.05</math></li> <li>• solve word problems involving the division of decimals, including those involving money</li> <li>• use estimation and rounding to check the reasonableness of answers when dividing decimals</li> </ul>
<b>Dividing decimals using written method</b>			
Dividing decimals using written method	1	Dividing decimals using written method	<ul style="list-style-type: none"> <li>• divide decimals up to thousandths using a standard algorithm</li> </ul>
<b>Dividing decimals by 10, 100, 1000</b>			
Dividing decimals by 10	1	Dividing decimals by 10	<ul style="list-style-type: none"> <li>• recognise that the digits move one place to the right</li> <li>• use zero as a place holder</li> <li>• use PV equipment to divide decimals by 10</li> </ul>

Learning Journey	Steps	Content	Details
Dividing decimals by 100	1	Dividing decimals by 100	<ul style="list-style-type: none"> <li>• recognise that the digits move 2 places to the right</li> <li>• use zero as a place holder</li> <li>• use PV equipment to divide decimals by 100</li> </ul>
Dividing decimals by 1000	1	Dividing decimals by 1000	<ul style="list-style-type: none"> <li>• recognise that the digits move three places to the right</li> <li>• use zero as a place holder</li> <li>• use PV equipment to divide decimals by 1000</li> </ul>
Dividing decimals by 10, 100, 1000	1	Dividing decimals by 10, 100, 1000	<ul style="list-style-type: none"> <li>• divide decimals by 10, 100, 1000</li> </ul>
<b>Dividing decimals by powers</b>			
Dividing decimals by powers of 10	1	Dividing decimals by powers of 10	<ul style="list-style-type: none"> <li>• use PV equipment to divide decimals by 10</li> <li>• recognise that the digits move one place to the right</li> <li>• use zero as a place holder</li> </ul>
Dividing decimals by powers of 100	1	Dividing decimals by powers of 100	<ul style="list-style-type: none"> <li>• use PV equipment to divide decimals by 100</li> <li>• recognise that the digits move two places to the right</li> <li>• use zero as a place holder</li> </ul>
Dividing decimals by powers of 1000	1	Dividing decimals by powers of 1000	<ul style="list-style-type: none"> <li>• use PV equipment to divide decimals by 1000</li> <li>• recognise that the digits move three places to the right</li> <li>• use zero as a place holder</li> </ul>
<b>Solve multiplication/division problems</b>			
Word problems: multiplying and dividing decimals	1	Solving decimal word problems involving multiplying and dividing	<ul style="list-style-type: none"> <li>• solve decimal word problems involving multiplying</li> <li>• solve decimal word problems involving dividing</li> </ul>
Using division to solve problems	1	Applying understanding of division to solve problems involving up to 2 decimal places using models	<ul style="list-style-type: none"> <li>• apply understanding of division to solve problems involving up to 2 decimal places using models, eg, bar model</li> </ul>
<b>Connecting fractions and decimals</b>			
Connecting fractions and decimals	1	Connecting decimals to equivalent fractions where the denominator is 10, 100 or 1000	<ul style="list-style-type: none"> <li>• connect decimals to equivalent fractions</li> </ul>
Converting fractions and decimals	1	Converting simple fractions to decimals using place value models and short division	<ul style="list-style-type: none"> <li>• convert simple fractions into decimals using short division and knowledge of tens, eg, <math>\frac{5}{8} = 5.0 \div 8</math> or 50 tenths divided by 8 = 0.625</li> </ul>

Percentages			
Percentages			
Learning Journey	Steps	Content	Details
Introducing percentages	1	Introducing percentages	<ul style="list-style-type: none"> <li>• recognise that the symbol % means 'percent'</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• understand that 'percent' relates to 'number of parts per one hundred'</li> <li>• write fractions with a denominator of 100 as percentages and vice versa</li> <li>• model percentages with concrete materials/ drawings, eg using 10x10 grid</li> <li>• identify real-life contexts where percentages are used</li> <li>• find a percent of a quantity as a rate per 100, eg 30% of a quantity means 30/100 times the quantity</li> </ul>
Representing fractions, percentages and decimals	1	Representing simple fractions as percentages	<ul style="list-style-type: none"> <li>• represent simple fractions as percentages and vice versa</li> <li>• model percentages with concrete materials/ drawings, eg using 10x10 grid</li> </ul>
			<ul style="list-style-type: none"> <li>• represent common fractions as percentages and vice versa</li> <li>• model percentages with concrete materials/ drawings, eg using 10x10 grid</li> </ul>
	2	Representing common fractions as percentages	<ul style="list-style-type: none"> <li>• represent common fractions as percentages and vice versa</li> <li>• model percentages with concrete materials/ drawings, eg using 10x10 grid</li> </ul>
			<ul style="list-style-type: none"> <li>• write decimals (&lt; 1) to 2 decimal places as percentages</li> <li>• model percentages and decimals using diagrams, eg number line or 100 grid</li> <li>• write decimals as percentages and vice versa</li> </ul>
			<ul style="list-style-type: none"> <li>• write decimals (&lt; 1) to 2 decimal places as percentages</li> <li>• model percentages and decimals using diagrams, eg number line or 100 grid</li> <li>• write decimals as percentages and vice versa</li> </ul>
			<ul style="list-style-type: none"> <li>• write decimals (&lt; 1) to 2 decimal places as percentages</li> <li>• model percentages and decimals using diagrams, eg number line or 100 grid</li> <li>• write decimals as percentages and vice versa</li> </ul>
Converting common fractions into percentages	1	Converting common fractions to percentages using mental strategies	<ul style="list-style-type: none"> <li>• use mental strategies to convert fractions to percentages</li> </ul>
	2	Converting common fractions to percentages using a calculator	<ul style="list-style-type: none"> <li>• use calculator strategies to convert fractions to percentages</li> </ul>
Calculating percentages			
Calculating simple percentages	1	Calculating simple percentages	<ul style="list-style-type: none"> <li>• estimate 0%, 1%, 10%, 25%, 50% and 100% of an amount including examples in context (exclude discounts), explain estimation</li> <li>• model 10%, 25% and 50% of an amount</li> <li>• calculate 10%, 25% and 50% of an amount including examples in context (exclude discounts)</li> </ul>
			<ul style="list-style-type: none"> <li>• estimate 0%, 1%, 10%, 25%, 50% and 100% of an amount including examples in context (exclude discounts), explain estimation</li> <li>• model 10%, 25% and 50% of an amount</li> <li>• calculate 10%, 25% and 50% of an amount including examples in context (exclude discounts)</li> </ul>
			<ul style="list-style-type: none"> <li>• estimate 0%, 1%, 10%, 25%, 50% and 100% of an amount including examples in context (exclude discounts), explain estimation</li> <li>• model 10%, 25% and 50% of an amount</li> <li>• calculate 10%, 25% and 50% of an amount including examples in context (exclude discounts)</li> </ul>
Calculating simple percentage discounts	1	Calculating simple percentage discounts	<ul style="list-style-type: none"> <li>• investigate and calculate percentage discounts of 10%, 25% and 50% on sale items</li> <li>• estimate quantities using benchmarks of 10%, 25% and 50%</li> <li>• calculate sale price by subtracting the proportion from the original amount</li> </ul>
			<ul style="list-style-type: none"> <li>• investigate and calculate percentage discounts of 10%, 25% and 50% on sale items</li> <li>• estimate quantities using benchmarks of 10%, 25% and 50%</li> <li>• calculate sale price by subtracting the proportion from the original amount</li> </ul>
			<ul style="list-style-type: none"> <li>• investigate and calculate percentage discounts of 10%, 25% and 50% on sale items</li> <li>• estimate quantities using benchmarks of 10%, 25% and 50%</li> <li>• calculate sale price by subtracting the proportion from the original amount</li> </ul>

Learning Journey	Steps	Content	Details
Calculating percentages of amounts	1	Calculating simple percentages of quantities	<ul style="list-style-type: none"> <li>calculate common percentages of quantities</li> <li>choose the most appropriate equivalent form of a percentage to aid calculation</li> </ul>
			<ul style="list-style-type: none"> <li>equate 10% to <math>\frac{1}{10}</math>, 25% to <math>\frac{1}{4}</math> and 50% to <math>\frac{1}{2}</math></li> <li>use mental strategies to estimate discounts of 10%, 25% and 50%,</li> <li>calculate the sale price of an item after a discount of 10%, 25% and 50%, recording the strategy and result</li> </ul>
			<ul style="list-style-type: none"> <li>use 50%, 10%, and 1% as strategies to mentally calculate amounts</li> </ul>
	2	Using 50%, 10% and 1% to mentally calculate amounts	<ul style="list-style-type: none"> <li>use 50%, 10%, and 1% as strategies to mentally calculate amounts</li> </ul>
<b>Fractions, decimals and percentages</b>			
Percentages as fractions and decimals	1	Investigating the relationships between fractions, decimals and percentages	<ul style="list-style-type: none"> <li>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</li> <li>record relationships between decimals, percentages and fractions (with denominators 2, 4, 5, 10, 20, 25, 50, 100)</li> <li>demonstrate understanding using symbolic representation</li> </ul>
Equivalence in fractions, decimals and percentages	1	Representing common equivalent fractions, decimals and percentages	<ul style="list-style-type: none"> <li>recall the relationships between decimals, percentages and fractions with denominators of 2, 4, 5, 10, 20, 25, 50 and 100</li> <li>recognise fractions, decimals and percentages as different representations of the same value</li> <li>interpret and explain the use of fractions, decimals and percentages in everyday contexts</li> <li>relate equivalence to proportion</li> </ul>
	2	Representing equivalent fractions, decimals and percentages	<ul style="list-style-type: none"> <li>write percentages as fractions in their simplest form</li> <li>write fractions with denominators that are factors of 100 as percentages by multiplying the numerator and denominator by a common value</li> <li>write fractions with denominators that are not factors of 100 as percentages by writing as a decimal first, eg using short division, then <math>\times 100</math> to write as a percentage</li> <li>write percentages as decimals and vice versa</li> <li>represent equivalent fractions, decimals and percentages</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• select and justify the most appropriate representation of a quantity — fraction, decimal, percentage</li> </ul>
Solving problems relating to equivalence	1	Solving problems relating to percentage and decimal equivalence	<ul style="list-style-type: none"> <li>• solve problems which require knowing percentage and decimal equivalents of <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{5}</math>, <math>\frac{2}{5}</math>, <math>\frac{4}{5}</math> and those fractions with a denominator or multiple of 10 or 25</li> </ul>



## 16 Measurement

Length			
Converting length			
Learning Journey	Steps	Content	Details
Converting metric units of length	1	Converting between common metric units of length up to 2 decimal places	• understand the meaning of metric prefixes, eg kilo-, centi- and milli-
			• convert between metres and kilo-metres
			• convert between millimetres, centimetres and metres to compare lengths and distances
			• relate the multiplicative relationship between centimetres and metres, metres and kilometres
			• explain and use the relationship between the size of a unit and the number of units needed to assist in determining whether multiplication or division is required when converting between units
	2	Converting between common metric units of length up to 3 decimal places	• understand the meaning of metric prefixes, eg kilo-, centi- and milli-
			• convert between metres and kilo-metres
			• convert between millimetres, centimetres and metres to compare lengths and distances
			• relate the multiplicative relationship between centimetres and metres, metres and kilometres
			• explain and use the relationship between the size of a unit and the number of units needed to assist in determining whether multiplication or division is required when converting between units
Solving length problems			
One-step problems involving length	1	Solving one-step problems involving length	• solve a variety of one-step problems involving length and perimeter, including different units of length
			• sketch or construct a rectangle, triangle or parallelogram given the perimeter and/or area
Two-step problems involving length	1	Solving two-step problems involving length	• solve a variety of two-step problems involving length and perimeter, including different units of length
Recording speed in kmph			
Introducing speed in metric units	1	Introducing speed using metric units	• recognise symbols used to record speed in kilometres per hour
			• solve simple problems involving speed

Area			
Area of triangles and rectangles			
Learning Journey	Steps	Content	Details
Area of triangles	1	Calculating area of a right-angled triangle without a formula	<ul style="list-style-type: none"><li>• establish that the area of a right-angled triangle is half the area of a rectangle with the same base and perpendicular height</li><li>• calculate the area of right-angled triangles using the relationship that the area is half the area of a rectangle with the same base and perpendicular height</li><li>• calculate the area of right-angled triangles where all three side lengths are given, using the relationship that the area is half the area of a rectangle with the same base and perpendicular height</li></ul>
	2	Calculating area of any triangle	<ul style="list-style-type: none"><li>• establish that the area of any triangle is <math>\text{Area of triangle} = \frac{1}{2} \times \text{base} \times \text{perpendicular height}</math>, including triangles in which the perpendicular height meets the base within the length of the base and also triangles in which the perpendicular height (altitude) meets the base outside the length of the base</li><li>• calculate the area of triangles where more dimensions than are necessary are given, using the relationship that the area is half the area of a rectangle with the same base and perpendicular height</li></ul>
Area of rectangles	1	Applying the formula for the area of a rectangle	<ul style="list-style-type: none"><li>• develop the formula for the area of a rectangle, <math>A = l \times w</math> (also <math>A = lw</math>)</li></ul>
			<ul style="list-style-type: none"><li>• 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</li></ul>
			<ul style="list-style-type: none"><li>• apply the formula for area of a rectangle to find the area of composite rectilinear figures, such as an L-shape, U-shape</li></ul>
			<ul style="list-style-type: none"><li>• apply the formula to real life contexts</li></ul>
Area of rectangles (mixed units)			
Formula for area of rectangles (mixed units)	1	Applying the formula for the area of a rectangle (metric and customary units)	<ul style="list-style-type: none"><li>• apply the formula for area of a rectangle to find the area of rectangles given 2 side lengths measured in the same units (metric and customary units)</li></ul>
			<ul style="list-style-type: none"><li>• find the width or length of a rectangle given the area and the measure of the other side</li></ul>

Learning Journey	Steps	Content	Details
Word problems: area of a rectangle (mixed units)	1	Solving word problems involving the area of a rectangle (metric and customary units)	<ul style="list-style-type: none"> <li>• solve word problems involving the area of a rectangle (metric and customary units)</li> </ul>
<b>Area of triangles (mixed units)</b>			
Finding the area of a triangle	1	Calculating area of any triangle (metric and customary units)	<ul style="list-style-type: none"> <li>• calculate the area of triangles where more dimensions than are necessary are given, using the relationship that the area is half the area of a rectangle with the same base and perpendicular height (metric and customary units)</li> </ul>
	2	Calculating area of a right-angled triangle without a formula (metric and customary units)	<ul style="list-style-type: none"> <li>• establish that the area of a right-angled triangle is half the area of a rectangle with the same base and perpendicular height (metric and customary units)</li> <li>• calculate the area of right-angled triangles using the relationship that the area is half the area of a rectangle with the same base and perpendicular height (metric and customary units)</li> <li>• calculate the area of right-angled triangles where all 3 side lengths are given, using the relationship that the area is half the area of a rectangle with the same base and perpendicular height (metric and customary units)</li> </ul>
	3	Calculating area of any triangle (metric and customary units)	<ul style="list-style-type: none"> <li>• establish that the area of any triangle is area of triangle = <math>\frac{1}{2} \times \text{base} \times \text{perpendicular height}</math>, including triangles in which the perpendicular height meets the base within the length of the base and also triangles in which the perpendicular height (altitude) meets the base outside the length of the base (metric and customary units)</li> </ul>

Volume and capacity			
Capacity with decimals			
Learning Journey	Steps	Content	Details
Converting metric units of capacity (inc decimals)	1	Converting between common metric units of capacity including fractions and decimals (to 2 decimal places)	<ul style="list-style-type: none"> <li>• convert between millilitres and litres using fractions eg 1 and 1/10 litres as 1100 mL or 3.8 l as 3800 mL</li> <li>• explain and use the relationship between the size of a unit and the number of units needed to assist in determining whether multiplication or division is required when converting between units</li> </ul>

Learning Journey	Steps	Content	Details
	2	Converting between common metric units of capacity (to 3 decimal places)	<ul style="list-style-type: none"><li>• convert between millilitres and litres</li></ul>
			<ul style="list-style-type: none"><li>• explain and use the relationship between the size of a unit and the number of units needed to assist in determining whether multiplication or division is required when converting between units</li></ul>
Connecting decimals to the metric system	1	Connecting decimal representations to the metric systems (to 3 decimal places)	<ul style="list-style-type: none"><li>• recognise the equivalence of whole-number and decimal representations of measurements of capacities</li></ul>
			<ul style="list-style-type: none"><li>• interpret decimal notation for volumes and capacities</li></ul>
			<ul style="list-style-type: none"><li>• record volume and capacity using decimal notation to 3 decimal places</li></ul>
Volume of rectangular prisms			
Volume of rectangular prisms	1	Calculating the volumes of rectangular prisms using additive and multiplicative strategies	<ul style="list-style-type: none"><li>• describe rectangular prisms in terms of layers</li></ul>
			<ul style="list-style-type: none"><li>• use repeated addition to find the volumes of rectangular prisms</li></ul>
			<ul style="list-style-type: none"><li>• establish the relationship between the number of cubes in 1 layer, the number of layers, and the volume of a rectangular prism</li></ul>
			<ul style="list-style-type: none"><li>• explain that the volume of a rectangular prism can be found by finding the number of cubes in 1 layer and multiplying by the number of layers</li></ul>
			<ul style="list-style-type: none"><li>• record, using words, the method for finding the volumes of rectangular prisms</li></ul>
			<ul style="list-style-type: none"><li>• calculate the volumes of rectangular prisms in cubic centimetres and cubic metres including calculating the volume given the net for the shape</li></ul>
			<ul style="list-style-type: none"><li>• record calculations used to find the volumes of rectangular prisms</li></ul>
Using the formula for volume			
Applying volume formulas for rectangular prisms	1	Using the formulas $V = l \times w \times h$ and $V = b \times h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems (metric and customary units)	<ul style="list-style-type: none"><li>• use the formulas <math>V = l \times w \times h</math> and <math>V = b \times h</math> to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems (metric and customary units)</li></ul>

Learning Journey	Steps	Content	Details
Solve problems: volume of a rectangular prism	1	Solve problems involving the volume of a rectangular prism	<ul style="list-style-type: none"> <li>• apply the formulas <math>V = l \times w \times h</math> and <math>V = b \times h</math> to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems</li> </ul>
Volume of composite rectangular prisms	1	Find the volume of composite rectangular prisms using additive strategies	<ul style="list-style-type: none"> <li>• find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts</li> </ul>
<b>Working with cubes and cuboids</b>			
Calculating & comparing volumes of cubes & cuboids	1	Calculating, estimating and comparing volumes of cubes and cuboids	<ul style="list-style-type: none"> <li>• estimate, calculate and compare volumes of cubes and prisms using standard units including <math>\text{mm}^3</math> and <math>\text{km}^3</math></li> </ul>

Mass			
Mass (metric)			
Learning Journey	Steps	Content	Details
Decimal representation in mass	1	Understanding decimal representation of metric measurements of mass	<ul style="list-style-type: none"> <li>• connect measurements of mass with their decimal representations</li> </ul>
			<ul style="list-style-type: none"> <li>• recognise the equivalence of whole number and decimal representations, eg <math>3 \text{ kg } 250 \text{ g} = 3.25 \text{ kg}</math></li> </ul>
			<ul style="list-style-type: none"> <li>• record mass using decimal notation of up to 3 decimal places</li> </ul>
			<ul style="list-style-type: none"> <li>• refer to SI units of mass</li> </ul>
Converting between standard metric units of mass	1	Converting between standard metric units of mass to 1 decimal place	<ul style="list-style-type: none"> <li>• understand the meaning of metric prefixes, eg kilo-, centi-, milli-</li> </ul>
			<ul style="list-style-type: none"> <li>• convert between grams and kilograms and vice versa</li> </ul>
			<ul style="list-style-type: none"> <li>• convert between kilograms and tonnes and vice versa</li> </ul>
			<ul style="list-style-type: none"> <li>• convert among grams, kilograms and tonnes</li> </ul>
	2	Converting between standard metric units of mass up to 2 decimal places	<ul style="list-style-type: none"> <li>• understand the meaning of metric prefixes, eg kilo-, centi-, milli-</li> </ul>
			<ul style="list-style-type: none"> <li>• convert between grams and kilograms and vice versa</li> </ul>
			<ul style="list-style-type: none"> <li>• convert between kilograms and tonnes and vice versa</li> </ul>
			<ul style="list-style-type: none"> <li>• convert among grams, kilograms and tonnes</li> </ul>
	3	Converting between standard metric units of mass up to 3 decimal places	<ul style="list-style-type: none"> <li>• understand the meaning of metric prefixes, eg kilo-, centi-, milli-</li> </ul>
			<ul style="list-style-type: none"> <li>• convert between grams and kilograms and vice versa</li> </ul>
			<ul style="list-style-type: none"> <li>• convert between kilograms and tonnes and vice versa</li> </ul>
			<ul style="list-style-type: none"> <li>• convert among grams, kilograms and tonnes</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>• solve problems using different units of mass</li> </ul>
<b>Solving multi-step problems: mass</b>			
Solving multi-step problems involving mass	1	Solving multi-step problems involving mass	<ul style="list-style-type: none"> <li>• solve a variety of problems involving mass, including same and different units of mass</li> </ul>

Time			
Timetables			
Learning Journey	Steps	Content	Details
Using 12 and 24 hour timetables	1	Using timetables (12-hour and 24-hour time)	<ul style="list-style-type: none"> <li>• use real-world timetables (12-hour and 24-hour time) to determine arrival time given the desired departure time, including when the departure time is not listed exactly in the timetable</li> </ul>
			<ul style="list-style-type: none"> <li>• use real-world timetables (12-hour and 24-hour time) to determine departure time given the desired arrival time, including when the arrival time is not listed exactly in the timetable</li> </ul>
			<ul style="list-style-type: none"> <li>• use real-world timetables (12-hour and 24-hour time) to determine the duration of a journey</li> </ul>
			<ul style="list-style-type: none"> <li>• solve real-world problems involving timetables</li> </ul>

## 17 Geometry

2D shape			
Introducing parts of a circle			
Learning Journey	Steps	Content	Details
Radius, diameter and circumference	1	Introducing parts of a circle: centre, radius, diameter and circumference	<ul style="list-style-type: none"> <li>• identify and name parts of circles</li> </ul>
			<ul style="list-style-type: none"> <li>• create a circle by finding points that are all the same distance from a fixed point</li> </ul>

Angles			
Exploring angles			
Learning Journey	Steps	Content	Details
Adjacent angles	1	Introducing adjacent angles	<ul style="list-style-type: none"> <li>• define adjacent angles as angles that share a common arm and a common vertex and recognise the larger angle created</li> </ul>
			<ul style="list-style-type: none"> <li>• recognise adjacent angles as additive and calculate the size of an unknown angle given the whole and its other parts and find the size of the whole given the size of the parts</li> </ul>
	2	Exploring adjacent angles that form a right angle	<ul style="list-style-type: none"> <li>• explore the relationship between angles that form a right angle</li> </ul>
			<ul style="list-style-type: none"> <li>• calculate an unknown angle within a right angle given the other parts</li> </ul>
	3	Exploring adjacent angles that form a straight angle	<ul style="list-style-type: none"> <li>• explore the relationship between angles that form a straight angle</li> </ul>
			<ul style="list-style-type: none"> <li>• calculate an unknown angle within a straight angle given the other parts</li> </ul>
	4	Exploring adjacent angles that form an angle of revolution	<ul style="list-style-type: none"> <li>• explore the relationship between angles that form an angle of revolution</li> </ul>
			<ul style="list-style-type: none"> <li>• calculate an unknown angle within an angle of revolution given the other parts</li> </ul>
Vertically opposite angles	1	Exploring vertically opposite angles	<ul style="list-style-type: none"> <li>• explore the relationship between angles formed when 2 straight lines intersect and identify these as 'vertically opposite angles'</li> </ul>
			<ul style="list-style-type: none"> <li>• use the equality of vertically opposite angles to find the size of unknown angles in diagrams</li> </ul>
			<ul style="list-style-type: none"> <li>• use the equality of vertically opposite angles to find the size of unknown angles represented by variables in diagrams</li> </ul>
			<ul style="list-style-type: none"> <li>• test congruence by overlaying shapes</li> </ul>

Rotation and translation of shapes			
Patterns in shape			
Learning Journey	Steps	Content	Details
Patterns from rotation	1	Creating patterns that result from rotating shapes	<ul style="list-style-type: none"> <li>• extend and create repeating patterns that result from rotations, through investigation using a variety of tools, eg pattern blocks, dynamic geometry software, geoboards, dot paper</li> </ul>
			<ul style="list-style-type: none"> <li>• describe the pattern</li> </ul>
			<ul style="list-style-type: none"> <li>• predict the next term/s in the pattern</li> </ul>
Patterns from translations	1	Creating patterns that result from translations	<ul style="list-style-type: none"> <li>• extend and create repeating patterns that result from translations through investigation using a variety of tools, eg pattern blocks, dynamic geometry software, dot paper</li> </ul>
			<ul style="list-style-type: none"> <li>• describe the pattern</li> </ul>
			<ul style="list-style-type: none"> <li>• predict the next term/s in the pattern</li> </ul>
			<ul style="list-style-type: none"> <li>• complete a table of values for a number pattern made using shapes and describe the pattern in words</li> </ul>

Position, movement and direction			
Cartesian plane (first quadrant)			
Learning Journey	Steps	Content	Details
Solving problems in the first quadrant	1	Representing and solving problems using coordinates in the first quadrant of the Cartesian plane	<ul style="list-style-type: none"> <li>• represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane</li> </ul>
			<ul style="list-style-type: none"> <li>• interpret coordinate values in the context of the situation</li> </ul>
Reflection with coordinates	1	Identifying 2D reflections on a grid or coordinate plane (first quadrant only)	<ul style="list-style-type: none"> <li>• identify 2D shapes in diagrams and on coordinate planes</li> </ul>
	2	Plotting reflections of shapes and points on a coordinate plane	<ul style="list-style-type: none"> <li>• plot reflections of shapes and points on a coordinate plane</li> </ul>
	3	Recording the positions of reflected points using coordinates	<ul style="list-style-type: none"> <li>• record the positions of reflected points using coordinates eg, (3,5)</li> </ul>
Calculating & comparing volumes of cubes & cuboids	1	Investigating translations in the first quadrant	<ul style="list-style-type: none"> <li>• identify the one-step transformation used to move a shape from 1 position to another</li> </ul>
			<ul style="list-style-type: none"> <li>• follow instructions to position a shape on a grid</li> </ul>
			<ul style="list-style-type: none"> <li>• identify the instructions required to translate a shape on a grid using suitable language such as left/right, up/down, number of squares moved</li> </ul>
	2	Translating coordinates in the first quadrant	<ul style="list-style-type: none"> <li>• record the new position of a coordinate after translation</li> <li>• describe the translation of coordinates</li> </ul>



Learning Journey	Steps	Content	Details
<b>Cartesian plane (four quadrants)</b>			
Introducing the coordinate system	1	Introducing the Cartesian coordinate system	<ul style="list-style-type: none"> <li>● recognise that the number plane consists of a horizontal axis (x-axis) and a vertical axis (y-axis), creating 4 quadrants</li> <li>● recognise that the horizontal axis and the vertical axis meet at right angles</li> <li>● identify the point of intersection of the 2 axes as the origin, having coordinates (0, 0)</li> </ul>
Locating points on the Cartesian/Coordinate plane	1	Locating points on the Cartesian plane	● plot and label points, given coordinates, in all 4 quadrants of the number plane
			● identify and label each quadrant on a number plane
			● plot a sequence of coordinates to create a picture
			● identify and record the coordinates of given points in all 4 quadrants of the number plane
	2	Finding the missing coordinate of a figure	● recognise that the order of coordinates is important when locating points on the number plane, eg (2, 3) is a location different from (3, 2)
			● find the missing coordinate of a figure with a coordinate plane
			● find the missing coordinate of a figure coordinates only
Graphing coordinates across the x- and y-axis	1	Recognising that when 2 ordered pairs differ only by signs, the locations of the points are reflections across 1 or both axes	● recognise that when 2 ordered pairs differ only by signs, the locations of the points are reflections across 1 or both axes
Drawing polygons in the coordinate plane	1	Drawing polygons in the coordinate plane given coordinates for the vertices	● draw polygons in the coordinate plane given coordinates for the vertices
Solving problems by graphing in the 4 quadrants	1	Solving real-world and mathematical problems by graphing points in all 4 quadrants of the coordinate plane	● solve real-world and mathematical problems by graphing points in all 4 quadrants of the coordinate plane
Find the distance between 2 points, absolute value	1	Using coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate	● use coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate

## 18 Operations and Algebraic Thinking

Expressions & Equations			
Equivalent expressions			
Learning Journey	Steps	Content	Details
Identifying equivalent expressions	1	Introducing algebraic expressions	<ul style="list-style-type: none"><li>Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient)</li></ul>
		Identifying equivalent expressions	<ul style="list-style-type: none"><li>identify equivalent expressions</li></ul>
Use simple formulae/formulas			
Find a rule - one step	1	Interpreting and creating number patterns involving 1 operation in the term-to-term rule	<ul style="list-style-type: none"><li>complete number patterns involving one operation</li></ul>
			<ul style="list-style-type: none"><li>describe the pattern in a variety of ways and record descriptions in words, eg 'It goes up by ones, starting from four'</li></ul>
			<ul style="list-style-type: none"><li>interpret explanations written by peers and teachers that accurately describe number patterns</li></ul>
			<ul style="list-style-type: none"><li>use the rule to predict the next few terms and predict whether a particular value will be in the pattern</li></ul>
			<ul style="list-style-type: none"><li>find missing terms in the number sequence</li></ul>
Generating numerical patterns			
Comparing numerical patterns	1	Comparing 2 pattern rules	<ul style="list-style-type: none"><li>generate 2 numerical patterns using 2 given rules</li></ul>
			<ul style="list-style-type: none"><li>identify apparent relationships between corresponding terms, eg given the rules 'Add 3' and 'Add 6' and the starting number 0, generate terms in the resulting sequences, and observe that the terms in 1 sequence are twice the corresponding terms in the other sequence</li></ul>
			<ul style="list-style-type: none"><li>explain thinking informally</li></ul>
	2	Creating and graphing ordered pairs from 2 patterns	<ul style="list-style-type: none"><li>create and graph ordered pairs from 2 patterns</li></ul>
Interpreting and creating a number pattern table	1	Interpreting and creating a table of values for number patterns involving 2 operations	<ul style="list-style-type: none"><li>complete a table of values resulting from patterns involving 2 operations</li></ul>
			<ul style="list-style-type: none"><li>describe the pattern in a variety of ways and record descriptions in words</li></ul>
			<ul style="list-style-type: none"><li>interpret explanations written by peers and teachers that accurately describe shape and number patterns</li></ul>
			<ul style="list-style-type: none"><li>use the rule to predict the next few terms and predict whether a particular value will be in the pattern</li></ul>

Learning Journey	Steps	Content	Details
Forming expressions	1	Developing and representing the general term of a linear growing pattern	<ul style="list-style-type: none"> <li>develop and represent the general term of a linear growing pattern, using algebraic expressions involving 1 operation, eg the general term for the sequence 4, 5, 6, 7, ... can be written algebraically as <math>n + 3</math>, where <math>n</math> represents the term number; the general term for the sequence 5, 10, 15, 20, ... can be written algebraically as <math>5n</math>, where <math>n</math> represents the term number</li> </ul>

## 19 Ratio and Proportion

Ratio and proportion			
Percent of a quantity			
Learning Journey	Steps	Content	Details
Expressing rates as a percent	1	Expressing simple ratios as a percentage	<ul style="list-style-type: none"> <li>find a percent of a quantity as a rate per 100, eg 30% of a quantity means 30/100 times the quantity</li> </ul>
Solving percent problems: finding the whole	1	Solving problems involving finding the whole, given a part and the percent	<ul style="list-style-type: none"> <li>solve problems involving finding the whole, given a part and the percent</li> </ul>

## 20 Statistics and data

Data			
Pie charts/sector graphs/circle graphs			
Learning Journey	Steps	Content	Details
Read and interpret pie charts	1	Interpreting sector/pie charts	<ul style="list-style-type: none"> <li>• interpret sector/pie charts using proportional reasoning and percentages</li> <li>• find the whole from the parts and vice versa</li> <li>• ask and answer comparison questions; make conclusions; identify data values</li> </ul>
Constructing pie charts	1	Constructing pie charts	<ul style="list-style-type: none"> <li>• construct pie charts using proportional reasoning and represent sectors as percentages</li> <li>• use knowledge of protractors and angles to construct pie charts; include a suitable title, labels and key</li> <li>• ask and answer questions related to data in the pie chart; draw conclusions</li> </ul>
Solving problems with pie charts	1	Solving problems using sector/pie charts	<ul style="list-style-type: none"> <li>• use proportional reasoning and the 4 operations to solve problems related to data in a sector/pie chart</li> </ul>
Pie charts with percentages	1	Representing and reading data in a sector/pie chart with simple percentages	<ul style="list-style-type: none"> <li>• represent data in a sector/pie chart segmented into tenths using given or collected data with 20 responses; include a key, suitable category labels and appropriate title</li> <li>• relate and represent data in a sector/pie chart as percentages</li> <li>• interpret data in a sector/pie chart; ask and answer questions related to the data in the display; draw conclusions</li> </ul>
Histograms			
Reading and interpreting data in a histogram	1	Reading and interpreting data in a histogram	<ul style="list-style-type: none"> <li>• read and interpret data in a histogram</li> </ul>
Box-and-whisker plots			
Reading and interpreting box-and-whisker plots	1	Introducing and interpreting box-and-whisker plots	<ul style="list-style-type: none"> <li>• become familiar with the structure of a box-and-whisker plot including minimum and maximum values, range, median, interquartile range, upper and lower quartiles</li> <li>• identify measures of centre, spread and variation in a box-and-whisker plot</li> </ul>
Interpreting secondary data			
Interpreting secondary data	1	Interpreting secondary data	<ul style="list-style-type: none"> <li>• interpret data representations found in digital media and in factual texts</li> <li>• interpret tables and graphs from the media and online sources</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>identify and describe conclusions that can be drawn from a particular representation of data</li> </ul>
<b>Data displays (mixed)</b>			
Constructing data displays	1	Constructing data displays for numerical data using dot plots, histograms and box-and-whisker plots	<ul style="list-style-type: none"> <li>display numerical data in plots on a number line, including dot plots, histograms, and box-and-whisker plots</li> </ul>

Statistical variability			
Statistical questions			
Learning Journey	Steps	Content	Details
Evaluating statistical questions	1	Evaluating statistical questions	<ul style="list-style-type: none"> <li>recognise a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers</li> </ul>
<b>Shape of data distribution</b>			
Introducing the shape of data distribution	1	Introducing the shape of data distribution	<ul style="list-style-type: none"> <li>understand that a set of data collected to answer a statistical question has a distribution</li> <li>describe the centre, spread, and overall shape of a data distribution</li> </ul>
<b>Measures of center/centre and variation</b>			
Introducing the upper and lower quartiles	1	Introducing the upper and lower quartiles	<ul style="list-style-type: none"> <li>identify the range and median in a set of data</li> <li>use the range and median to identify the upper and lower quartiles; understand that the 25% of values sit beneath the lower quartile and 25% of values sit above the upper quartile</li> <li>compare upper and lower quartiles in sets of data; relate data distribution shapes to the upper and lower quartiles</li> </ul>
Introducing interquartile range	1	Introducing interquartile range	<ul style="list-style-type: none"> <li>identify the range, median and upper and lower quartiles in a set of data</li> <li>identify the interquartile range in a set of data; understand that 50% of the data values sit within the interquartile range</li> <li>compare the interquartile range in sets of data; relate data distribution shapes to the interquartile range</li> </ul>
<b>Summarising numerical data</b>			
Formulating a summary for numerical data	1	Summarising a set of data	<ul style="list-style-type: none"> <li>report the number of observations</li> <li>describe the nature of the attribute being measured, how it was measured and the unit of measurement</li> <li>give measure of centre and spread; describe overall pattern; describe major deviations from the pattern with reference to the context in which the data was gathered</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>relate the choice of measure of centre and variability to the shape of the data distribution and the context in which the data was gathered</li> </ul>
<b>Reporting observations</b>			
Reporting observations in a data display	1	Reporting the number of observations in a data display	<ul style="list-style-type: none"> <li>report the number of observations in a dot plot</li> <li>report the number of observations in a histogram</li> <li>report the number of observations in a box-and-whisker plot</li> </ul>
<b>Attributes of data</b>			
Describing attributes of data in data displays	1	Describing attributes of data, including how they were measured, in different data displays	<ul style="list-style-type: none"> <li>describe attributes of data, including how they were measured, in different data displays</li> </ul>
<b>Calculate measure of centre &amp; variation</b>			
Calculating the mean absolute deviation	1	Finding the mean absolute variation	<ul style="list-style-type: none"> <li>identify the absolute value of each piece of data in comparison to the mean and enter the absolute value into a table</li> <li>find the mean absolute deviation by totalling all the absolute values and dividing by the number of values</li> </ul>
Identifying skewed and symmetrical sets of data	1	Identifying skewed and symmetrical sets of data	<ul style="list-style-type: none"> <li>identify skewed and symmetrical sets of data</li> </ul>

Probability and chance			
<b>Understanding chance experiments</b>			
Learning Journey	Steps	Content	Details
Frequency in chance experiments	1	Comparing observed frequencies with expected frequencies in chance experiments	<ul style="list-style-type: none"> <li>use the term 'frequency' to describe the number of times a particular outcome occurs in a chance experiment</li> <li>distinguish between the 'frequency' of an outcome and the 'probability' of an outcome in a chance experiment</li> <li>record and compare the expected frequencies of outcomes of chance experiments with observed frequencies, including where the outcomes are not equally likely</li> <li>explain why observed frequencies of outcomes in chance experiments may differ from expected frequencies</li> <li>recognise that some random generators have outcomes that are not equally likely and discuss the effect on expected outcomes</li> </ul>
Fairness in chance experiments	1	Exploring fair and unfair chance experiments	<ul style="list-style-type: none"> <li>discuss the 'fairness' of simple games involving chance</li> </ul>

Learning Journey	Steps	Content	Details
			<ul style="list-style-type: none"> <li>design a spinner or label a dice so that a particular outcome is more likely than another and discuss the fairness of the outcomes</li> <li>list all possible outcomes using tables, lists and tree diagrams (with or without digital technology) where outcomes are not equally likely to occur</li> <li>record results of chance experiments using appropriate methods, eg tally chart, line plot, bar graph</li> </ul>
Probability as a fraction, decimal or percent	1	Describing probability of a single event using fractions, decimals and percentages	<ul style="list-style-type: none"> <li>list the outcomes for chance experiments where the outcomes are not equally likely to occur and assign experimental probabilities to the outcomes using fractions</li> <li>use knowledge of equivalent fractions, decimals and percentages to assign probabilities to the likelihood of outcomes within concrete examples</li> <li>explain real-life events in the context of probabilities</li> <li>use the terminology 'theoretical probability' and/ or 'relative frequency' as the value given by the formula: number of times named outcome(s) did happen / total number of trials</li> </ul>
			<ul style="list-style-type: none"> <li>assign expected probabilities to outcomes in chance experiments with random generators, including digital simulators, and compare the expected probabilities with the observed probabilities after both small and large numbers of trials</li> <li>determine and discuss the differences between the expected probabilities and the observed probabilities after both small and large numbers of trials</li> <li>explain what happens to the observed probabilities as the number of trials increases</li> </ul>
	2	Using digital technologies to conduct chance experiments	





For more information about Mathletics,  
contact our friendly team.

[www.mathletics.com/contact](http://www.mathletics.com/contact)



A 3P Learning Product