



Spring Vale Primary School

Mathematics Calculation Policy



This policy has been largely adapted from the White Rose Maths Hub Calculation Policy with further material added. It is a working document and will be revised and amended as necessary.

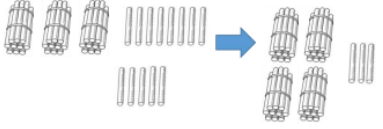
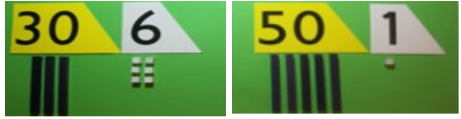
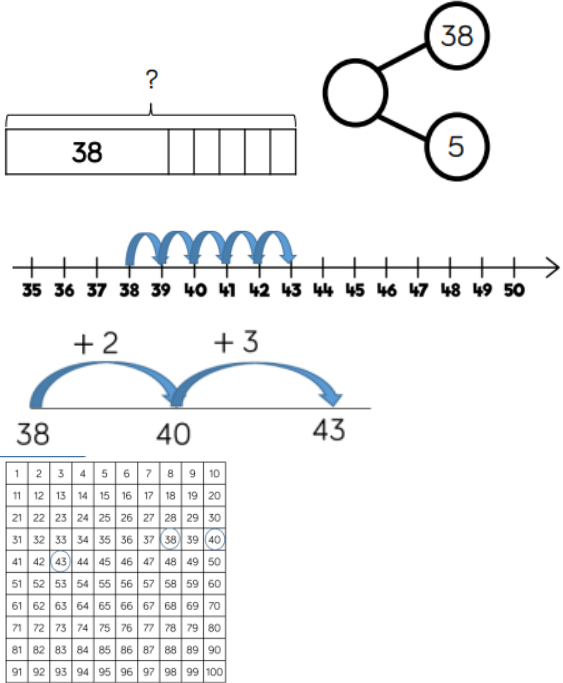
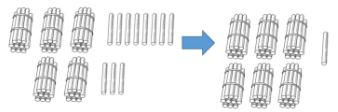
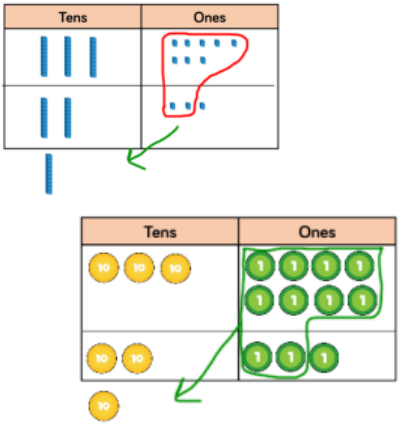
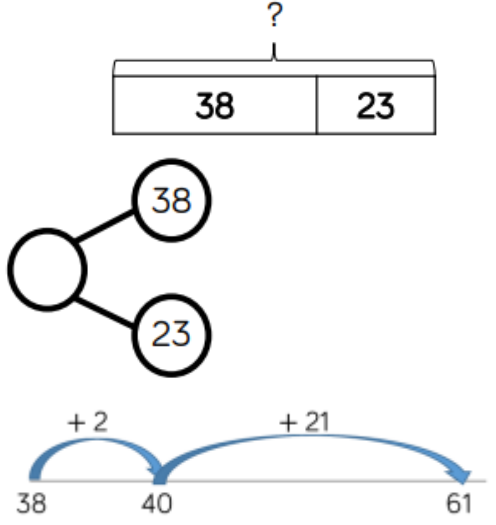
This document provides teachers with a range of tools and strategies to support pupils in their understanding of number and calculation.

The mathematical language used in Maths lessons by teachers and children reflects the vocabulary used in this policy.


$$7 + 6 + 3 = 16$$



Addition

Skill	Concrete	Pictorial	Abstract
Year 2 / 3: Add 1-digit and 2-digit numbers to 100	 		$38 + 5 = 43$
Year 2 / 3: Add two 2-digit numbers to 100	 		$38 + 23 = 61$ $\begin{array}{r} 38 \\ + 23 \\ \hline 61 \\ 1 \end{array}$



Addition

Skill	Concrete	Pictorial	Abstract
Year 3: Add numbers with up to 3 digits			$265 + 164 = 429$ $\begin{array}{r} 265 \\ + 164 \\ \hline 429 \\ 1 \end{array}$
Year 4: Add numbers with up to 4 digits			$1,378 + 2,148 = 3,526$ $\begin{array}{r} 1378 \\ + 2148 \\ \hline 3526 \\ 11 \end{array}$



Addition

Skill	Concrete	Pictorial	Abstract																		
Year 5 / 6: Add numbers with more than 4 digits			104,328 + 61,731 = 166,059 <table><tr><td>1</td><td>0</td><td>4</td><td>3</td><td>2</td><td>8</td></tr><tr><td>+</td><td>6</td><td>1</td><td>7</td><td>3</td><td>1</td></tr><tr><td>1</td><td>6</td><td>6</td><td>0</td><td>5</td><td>9</td></tr></table>	1	0	4	3	2	8	+	6	1	7	3	1	1	6	6	0	5	9
1	0	4	3	2	8																
+	6	1	7	3	1																
1	6	6	0	5	9																
Year 5: Add with up to 3 decimal places			3.65 + 2.41 = 6.06 3.65 + 2.41 ----- 6.06 1																		



Subtraction

Skill	Concrete	Pictorial	Abstract
Year 1: Subtract 1-digit numbers within 10			$7 - 3 = 4$
Year 1 / 2: Subtract 1 and 2-digit numbers to 20			$14 - 6 = 8$



Subtraction

Skill	Concrete	Pictorial	Abstract
Year 2 / 3: Subtract 1 and 2-digit numbers to 100			$65 - 28 = 37$ $\begin{array}{r} 5 1 \\ 65 \\ - 28 \\ \hline 37 \end{array}$
Year 3: Subtract numbers with up to 3 digits			$435 - 273 = 162$ $\begin{array}{r} 3 1 \\ 435 \\ - 273 \\ \hline 162 \end{array}$



Subtraction

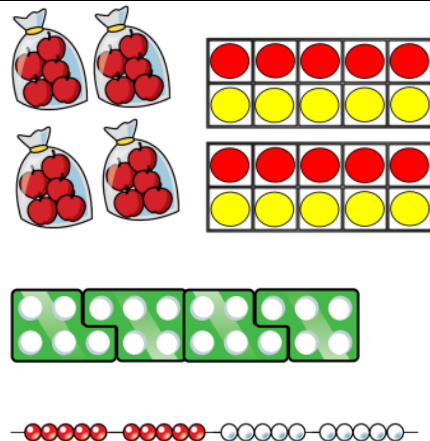
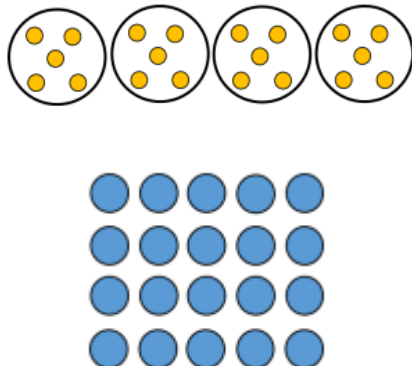
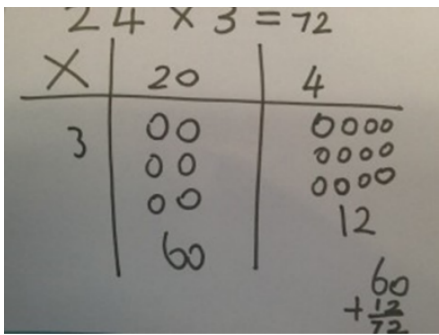
Skill	Concrete	Pictorial	Abstract																																													
Year 4: Subtract numbers with up to 4 digits	<table><tr><th>Thousands</th><th>Hundreds</th><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td><td></td><td></td></tr></table> <table><tr><th>Thousands</th><th>Hundreds</th><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td><td></td><td></td></tr></table>	Thousands	Hundreds	Tens	Ones					Thousands	Hundreds	Tens	Ones					4,357 2,735 ? 4,357 2,735 ? 4,357 2,735 ?	4,357 − 2,735 = 1,622 3 1 4357 − 2735 1622																													
Thousands	Hundreds	Tens	Ones																																													
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Year 5 / 6: Subtract numbers with more than 4 digits	<table><tr><th>HTh</th><th>TTh</th><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> <table><tr><th>HTh</th><th>TTh</th><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	HTh	TTh	Th	H	T	O							HTh	TTh	Th	H	T	O							294,382 182,501 ? 294,382 182,501 ? 294,382 182,501 ?	294,382 − 182,501 = 111,881 <table><tr><td></td><td>2</td><td>9</td><td>3</td><td>13</td><td>8</td><td>2</td></tr><tr><td>−</td><td>1</td><td>8</td><td>2</td><td>5</td><td>0</td><td>1</td></tr><tr><td></td><td>1</td><td>1</td><td>1</td><td>8</td><td>8</td><td>1</td></tr></table>		2	9	3	1 3	8	2	−	1	8	2	5	0	1		1	1	1	8	8	1
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	1	1	1	8	8	1																																										



Subtraction

Skill	Concrete	Pictorial	Abstract
Year 5 / 6: Subtract with up to 3 decimal places			$5.43 - 2.7 = 2.73$ $\begin{array}{r} 5.43 \\ - 2.7 \\ \hline 2.73 \end{array}$

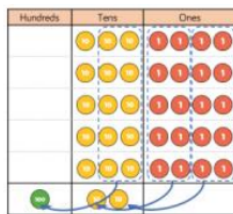
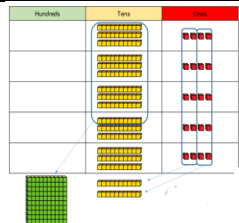


Skill	Concrete	Pictorial	Abstract																																											
Year 1 / 2: Solve 1-step problems using multiplication Year 1 – Children use concrete and pictorial representations to solve problems. They are not expected to record multiplication formally. Year 2 – Children are introduced to the multiplication symbol.	One bag holds 5 apples. How many apples do 4 bags hold? 		$5 + 5 + 5 + 5 = 20$$4 \times 5 = 20$$5 \times 4 = 20$																																											
Year 3 / 4: Multiply 2-digit numbers by 1-digit numbers Y3 – Informal methods and the expanded methods are used. Y4 – Short multiplication method	<table><tr><td>x</td><td>10</td><td>3</td></tr><tr><td>4</td><td></td><td></td></tr></table><table><tr><td>x</td><td>T</td><td>U</td></tr><tr><td></td><td></td><td></td></tr></table>	x	10	3	4			x	T	U					<table><tr><td>x</td><td>10</td><td>3</td></tr><tr><td>4</td><td>40</td><td>12</td></tr></table> 40 + 12 = 52 <table><tr><td></td><td>H</td><td>T</td><td>O</td><td></td></tr><tr><td></td><td></td><td>3</td><td>4</td><td></td></tr><tr><td>x</td><td></td><td></td><td>5</td><td></td></tr><tr><td></td><td>1</td><td>7</td><td>0</td><td></td></tr><tr><td></td><td>1</td><td>2</td><td></td><td></td></tr></table>	x	10	3	4	40	12		H	T	O				3	4		x			5			1	7	0			1	2		
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	1	7	0																																											
	1	2																																												



Multiplication

Place value counters should be used to support the understanding of the method



	H	T	O		
		3	4		
×			5		
		2	0	(5 × 4)	
+	1	5	0	(5 × 30)	
	1	7	0		

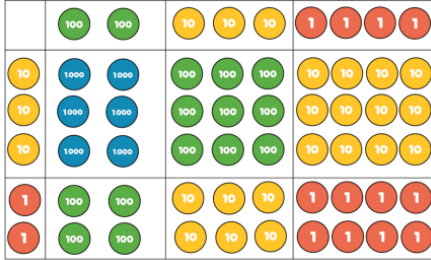


Multiplication

Skill	Concrete	Pictorial	Abstract																																	
Year 4: Multiply 3-digit numbers by 1-digit numbers	 		<table><tr><td></td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td>2</td><td>4</td><td>5</td></tr><tr><td>x</td><td></td><td></td><td>4</td></tr><tr><td colspan="4"> </td></tr><tr><td></td><td>9</td><td>8</td><td>0</td></tr><tr><td></td><td>1</td><td>2</td><td></td></tr></table>		H	T	O		2	4	5	x			4						9	8	0		1	2										
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	2	4	5																																	
x			4																																	
	9	8	0																																	
	1	2																																		
Year 5: Multiply 4-digit numbers by 1-digit numbers			1,826 x 3 = 5,478 <table><tr><td></td><td>Th</td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td>1</td><td>8</td><td>2</td><td>6</td></tr><tr><td>x</td><td></td><td></td><td></td><td>3</td></tr><tr><td></td><td>5</td><td>4</td><td>7</td><td>8</td></tr><tr><td></td><td>2</td><td></td><td>1</td><td></td></tr></table>		Th	H	T	O		1	8	2	6	x				3		5	4	7	8		2		1									
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x				3																																
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Year 5: Multiply 2-digit numbers by 2-digit numbers	 		<table><tr><td>x</td><td>20</td><td>2</td></tr><tr><td>30</td><td>600</td><td>60</td></tr><tr><td>1</td><td>20</td><td>2</td></tr></table> <table><tr><td></td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td></td><td>2</td><td>2</td></tr><tr><td>x</td><td></td><td>3</td><td>1</td></tr><tr><td></td><td></td><td>2</td><td>2</td></tr><tr><td></td><td>6</td><td>6</td><td>0</td></tr><tr><td></td><td>6</td><td>8</td><td>2</td></tr></table>	x	20	2	30	600	60	1	20	2		H	T	O			2	2	x		3	1			2	2		6	6	0		6	8	2
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x		3	1																																	
		2	2																																	
	6	6	0																																	
	6	8	2																																	



Multiplication

Skill	Concrete	Pictorial	Abstract																																				
Year 5: Multiply 3-digit numbers by 2-digit numbers	 Base 10 can be used to highlight the size of numbers.	(Same as previous)	<table><tr><td>×</td><td>200</td><td>30</td><td>4</td></tr><tr><td>30</td><td>6,000</td><td>900</td><td>120</td></tr><tr><td>2</td><td>400</td><td>60</td><td>8</td></tr></table> <table><tr><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td>2</td><td>3</td><td>4</td></tr><tr><td>×</td><td></td><td>3</td><td>2</td></tr><tr><td></td><td>4</td><td>6</td><td>8</td></tr><tr><td>¹7</td><td>¹0</td><td>2</td><td>0</td></tr><tr><td>7</td><td>4</td><td>8</td><td>8</td></tr></table>	×	200	30	4	30	6,000	900	120	2	400	60	8	Th	H	T	O		2	3	4	×		3	2		4	6	8	¹ 7	¹ 0	2	0	7	4	8	8
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Year 5 / 6: Multiply 4-digit numbers by 2-digit numbers			<table><tr><th>TTh</th><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td>2</td><td>7</td><td>3</td><td>9</td></tr><tr><td>×</td><td></td><td></td><td>2</td><td>8</td></tr><tr><td>²2</td><td>⁵1</td><td>³9</td><td>⁷1</td><td>2</td></tr><tr><td>¹5</td><td>4</td><td>¹7</td><td>8</td><td>0</td></tr><tr><td>7</td><td>6</td><td>6</td><td>9</td><td>2</td></tr></table> 1	TTh	Th	H	T	O		2	7	3	9	×			2	8	² 2	⁵ 1	³ 9	⁷ 1	2	¹ 5	4	¹ 7	8	0	7	6	6	9	2						
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¹ 5	4	¹ 7	8	0																																			
7	6	6	9	2																																			



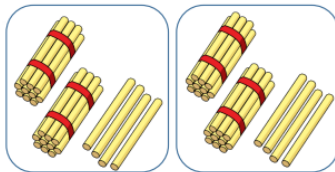
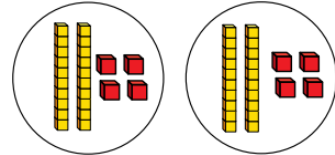
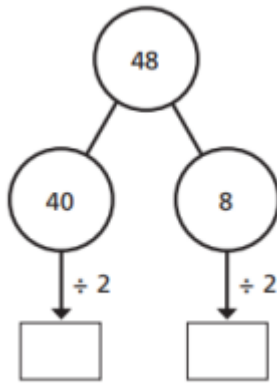
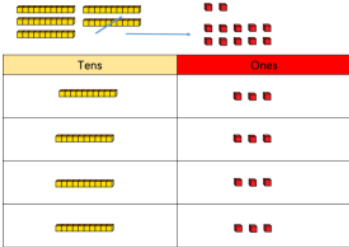
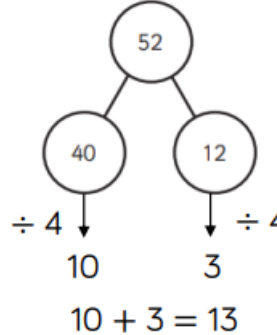


Division

Skill	Concrete	Pictorial	Abstract
Year 1 / 2: Solve 1-step problems using division (sharing) Year 1 – Children use concrete and pictorial representations to solve problems. They are not expected to record division formally. Year 2 – Children are introduced to the division symbol.	There are 20 apples altogether. They are shared equally between 5 bags. How many apples are in each bag?		
		20 $20 \div 5 = 4$	$20 \div 5 = 4$
Year 1 / 2: Solve 1-step problems using division (grouping)	There are 20 apples altogether. They are put in bags of 5. How many bags are there?		
		$20 \div 5 = 4$	$20 \div 5 = 4$



Division

Skill	Concrete	Pictorial	Abstract										
Year 3: Divide 2-digits by 1-digit (sharing with no exchange)	  <table><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td> </td><td>   </td></tr><tr><td> </td><td>   </td></tr></tbody></table>	Tens	Ones	 	   	 	   						
Tens	Ones												
 	   												
 	   												
Year 3 / 4: Divide 2-digits by 1-digit (sharing with exchange)	  <table><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td></td><td>  </td></tr><tr><td></td><td>  </td></tr><tr><td></td><td>  </td></tr><tr><td></td><td>  </td></tr></tbody></table>	Tens	Ones		  		  		  		  	 52	
Tens	Ones												
	  												
	  												
	  												
	  												



Division

Skill	Concrete	Pictorial	Abstract
Year 3 / 4: Divide 2-digits by 1-digit (sharing with remainders)			
Year 5: Divide 2-digits by 1-digit (grouping)			



Division

Skill	Concrete	Pictorial	Abstract
Year 4: Divide 3-digits by 1-digit (sharing)			
Year 5: Divide 3-digits by 1-digit (grouping)		Children can draw their own counters and group them	



Division

Skill	Concrete	Pictorial	Abstract
Year 5: Divide 4-digits by 1-digit (grouping)		Children can draw their own counters and group them	
Year 6: Divide multi digits by 2-digits (short division) Written methods are the most accurate. Children can write out multiples to support their calculations with larger remainders.			$432 \div 12 = 36$ $7,335 \div 15 = 489$



Division

Skill	Concrete	Pictorial	Abstract																																																																														
Year 6: Divide multi-digits by 2-digits (long division)			<table><tr><td></td><td></td><td>0</td><td>3</td><td>6</td></tr><tr><td>1</td><td>2</td><td>4</td><td>3</td><td>2</td></tr><tr><td></td><td>-</td><td>3</td><td>6</td><td>0</td></tr><tr><td></td><td></td><td></td><td>7</td><td>2</td></tr><tr><td></td><td>-</td><td></td><td>7</td><td>2</td></tr><tr><td></td><td></td><td></td><td></td><td>0</td></tr></table> (x30) (x6) 12 × 1 = 12 12 × 2 = 24 12 × 3 = 36 12 × 4 = 48 12 × 5 = 60 12 × 6 = 72 12 × 7 = 84 12 × 8 = 96 12 × 9 = 108 12 × 10 = 120 432 ÷ 12 = 36			0	3	6	1	2	4	3	2		-	3	6	0				7	2		-		7	2					0																																																
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Year 6: Divide multi digits by 2-digits (long division)			372 ÷ 15 = 24 r12 <table><tr><td></td><td></td><td></td><td>2</td><td>4</td><td>r</td><td>1</td><td>2</td></tr><tr><td>1</td><td>5</td><td>3</td><td>7</td><td>2</td><td></td><td></td><td></td></tr><tr><td></td><td>-</td><td>3</td><td>0</td><td>0</td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td>7</td><td>2</td><td></td><td></td><td></td></tr><tr><td></td><td>-</td><td></td><td>6</td><td>0</td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td>1</td><td>2</td><td></td><td></td><td></td></tr></table> <table><tr><td></td><td></td><td></td><td>2</td><td>4</td></tr><tr><td>1</td><td>5</td><td>3</td><td>7</td><td>2</td></tr><tr><td></td><td>-</td><td>3</td><td>0</td><td>0</td></tr><tr><td></td><td></td><td></td><td>7</td><td>2</td></tr><tr><td></td><td>-</td><td></td><td>6</td><td>0</td></tr><tr><td></td><td></td><td></td><td>1</td><td>2</td></tr></table> 4 5 372 ÷ 15 = 24 ⁴/₅				2	4	r	1	2	1	5	3	7	2					-	3	0	0							7	2					-		6	0							1	2							2	4	1	5	3	7	2		-	3	0	0				7	2		-		6	0				1	2
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