

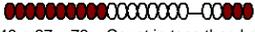
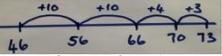
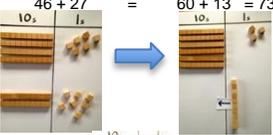
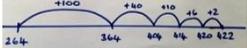
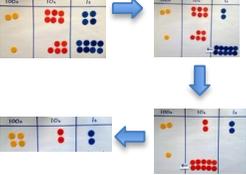
Ellwood Community Primary School



Calculation Policy

Addition



<p>Written Methods</p>	<p>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</p>		<p>Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction</p> $\begin{array}{r} 423 \\ +88 \\ \hline 511 \end{array}$	<p>Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition where appropriate</p> $\begin{array}{r} 2458 \\ +596 \\ \hline 3054 \end{array}$	<p>Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</p> $\begin{array}{r} 23454 \\ + 596 \\ \hline 24050 \end{array}$	<p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</p>
<p>Developing conceptual understanding</p>	<p>Number bonds</p>  <p>Ten Frame Numicon</p> <p>Use bonds of 10 to calculate bonds of 20</p>  <p>Count all</p>  <p>Count on</p>  <p>Count on, on number track, in 1s</p> 	<p>Number track / Number line – jumps of 1 then efficient jumps using number bonds $18 + 5 = 23$</p>  <p>$46 + 27 = 73$ Count in tens then bridge.</p>  <p>$25 + 29$ by $+30$ then -1 (Round and adjust)</p>  <p>Partition and recombine</p> $46 + 27 = 60 + 13 = 73$  <p>$24 + 10 + 10 + 10 = 54$</p> 	<p>Number line: $264 + 158$ efficient jumps</p>  <p>$40 + 80 = 120$ using $4 + 8 = 12$ So $400 + 800 = 1200$</p> <p>$243 + 198$ by $+200$ then -2 (Round and adjust)</p>  <p>Pairs that make 100 $23 + 77$</p> <p>Place value counters, 100s 10s 1s $264 + 158$</p>  <p>(Also with £, 10p and 1p)</p>			
<p>With jottings ... or in your head</p>	<p>Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = _ - 9$</p>	<p>Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:</p> <ul style="list-style-type: none"> * a two-digit number and ones * a two-digit number and tens * two two-digit numbers * adding three one-digit numbers 	<p>Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:</p> <ul style="list-style-type: none"> * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds 	<p>Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why</p>	<p>Add and subtract numbers mentally with increasingly large numbers</p>	<p>Perform mental calculations, including with mixed operations and large numbers</p>
<p>Just know it!</p>	<p>Represent & use number bonds and related subtraction facts within 20 Add and subtract one-digit and two-digit numbers to 20, including zero</p>	<p>Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100</p>				
<p>Year</p>	1	2	3	4	5	6
<p>Foundations</p>	<p>1 more</p>	<p>10 more Number bonds: 20, 12, 13</p>	<p>Add multiples of 10, 100</p>	<p>Add multiples of 10s, 100s, 1000s</p>	<p>Add multiples of 10s, 100s, 1000s, tenths,</p>	<p>Add multiples of 10s, 100s, 1000s, tenths, hundredths</p>
	<p>Number bonds: 5, 6</p>	<p>Number bonds: 14, 15 Add 1 digit to 2 digit by bridging</p>	<p>Add single digit bridging through boundaries</p>	<p>Fluency of 2 digit + 2 digit</p>	<p>Fluency of 2 digit + 2 digit including with decimals</p>	<p>Fluency of 2 digit + 2 digit including with decimals</p>
	<p>Largest number first. Number bonds: 7, 8</p>	<p>Partition second number, add tens then ones</p>	<p>Partition second number to add Pairs of 100</p>	<p>Partition second number to add Decimal pairs of 10 and 1</p>	<p>Partition second number to add</p>	<p>Partition second number to add</p>
	<p>Add 10. Number bonds: 9, 10</p>	<p>Add 10 and multiples. Number bonds: 16 and 17</p>	<p>Use near doubles to add</p>	<p>Use near doubles to add</p>	<p>Use number facts, bridging and place value</p>	<p>Use number facts, bridging and place value</p>
	<p>Ten plus ones. Doubles up to 10.</p>	<p>Doubles up to 20 and multiples of 5 Add near multiples of 10</p>	<p>Add near multiples of 10 and 100 by rounding and adjusting</p>	<p>Adjust both numbers before adding Add near multiples</p>	<p>Adjust numbers to add</p>	<p>Adjust numbers to add</p>
	<p>Number bonds: 18, 19 Partition and recombine</p>	<p>Partition and recombine</p>	<p>Partition and recombine</p>	<p>Partition and recombine</p>	<p>Partition and recombine</p>	

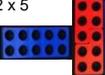
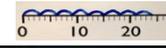
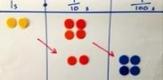


Subtraction

<p>Written Methods</p>	<p>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</p>		<p>Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction</p> $\begin{array}{r} 2\ 3\ 1 \\ 344 \\ -187 \\ \hline 157 \end{array}$	<p>Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition where appropriate</p> $\begin{array}{r} 1 \\ 2\ 3\ 1 \\ 2344 \\ - \\ \hline 187 \\ \hline 2157 \end{array}$	<p>Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</p> $\begin{array}{r} 2\ 3 \\ 52344 \\ - 1187 \\ \hline 51157 \end{array}$	<p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</p>
<p>Developing conceptual understanding</p>	<p>Number bonds Ten Frame Numicon Difference between 7 and 10 6 less than 10 is 4 Count out, then count how many are left $7 - 3 = 4$ Count back on a number track, then number line $15 - 6 = 9$ Difference between 13 and 8 $13 - 8 = _$ $8 + _ = 13$</p>	<p>Number track / Number line – jumps of 1 then efficient jumps using number bonds $23 - 5 = 18$ Using a number line, $73 - 46 = 26$ Difference between 73 – 58 by counting up, $58 + _ = 73$ Taking away and exchanging, $73 - 46$ Where's the 'forty and six?' Exchange to create 'sixty thirteen' 'Twenty seven' Now take away the 'forty and six'</p>	<p>Taking away and exchanging, $344 - 187$ Place value counters and Base 10 <i>Where's the one hundred and eighty and seven?</i> Exchange to create three hundred and thirty and fourteen. <i>Now take away the 'seven'.</i> Exchange to create two hundred, thirteen tens and seven <i>Now take away The 'eighty'</i> Now take away the 'one hundred'</p>			
<p>With jottings ... or in your head</p>	<p>Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = _ - 9$</p>	<p>Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: * a two-digit number and ones * a two-digit number and tens * two two-digit numbers * adding three one-digit numbers</p>	<p>Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds</p>	<p>Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why</p>	<p>Add and subtract numbers mentally with increasingly large numbers</p>	<p>Perform mental calculations, including with mixed operations and large numbers</p>
<p>Just know it!</p>	<p>Represent & use number bonds and related subtraction facts within 20 Add and subtract one-digit and two-digit numbers to 20, including zero</p>	<p>Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100</p>				
<p>Year</p>	<p>1</p>	<p>2</p>	<p>3</p>	<p>4</p>	<p>5</p>	<p>6</p>
<p>Foundations</p>	<p>1 less Number bonds, subtraction: 5, 6 Count back Number bonds, subtraction: 7, 8 Subtract 10. Number bonds, subtraction: 9, 10 Teens subtract 10. Difference between.</p>	<p>10 less Number bonds, subtraction: 20, 12, 13 Number bonds, subtraction: 14, 15 Subtract 1 digit from 2 digit by bridging Partition second number, count back tens in 10s then ones Subtract 10 and multiples of 10. Number bonds, subtraction: 16 and 17 Subtraction near multiples of 10 Number bonds, subtraction: 18, 19 Difference between</p>	<p>Subtract multiples of 10, 100 Subtract single digit by bridging through boundaries Partition second number to subtract Difference between Subtract near multiples of 10 and 100 by rounding and adjusting</p>	<p>Subtract multiples of 10s, 100s, 1000s Fluency of 2 digit - 2 digit Partition second number to subtract Decimal subtraction from 10 or 1 Difference between Subtract near multiples by rounding and adjusting</p>	<p>Subtract multiples of 10s, 100s, 1000s, tenths, Fluency of 2 digit - 2 digit including with decimals Partition second number to subtract Difference between Adjust numbers to subtract</p>	<p>Subtract multiples of 10s, 100s, 1000s, tenths, hundredths Fluency of 2 digit - 2 digit including with decimals Partition second number to subtract Use number facts, bridging and place value Adjust numbers to subtract Difference between</p>

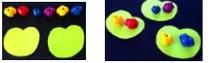
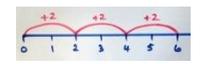
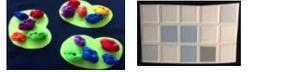
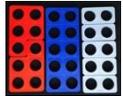
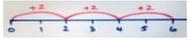
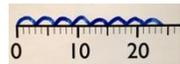
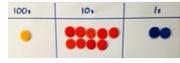
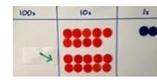
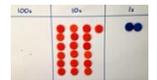
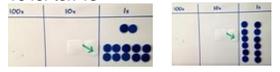
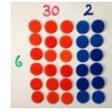
Multiplication



<p>Written Methods</p>		<p>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs</p>	<p>Write and calculate mathematical statements for ÷ using the x tables they know progressing to formal written methods.</p>	<p>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout</p> $\begin{array}{r} 243 \\ \times 6 \\ \hline 1458 \\ \hline \end{array}$	<p>Multiply numbers up to 4 digits by a one- or two- digit number using a formal written method, including long multiplication for two-digit numbers</p> $\begin{array}{r} 243 \\ \times 36 \\ \hline 1458 \\ \hline 7290 \\ \hline 8748 \\ \hline \end{array}$	<p>Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</p> $\begin{array}{r} 5172 \\ \times 38 \\ \hline 41376 \\ + 155160 \\ \hline 196536 \\ \hline \end{array}$																					
<p>Developing conceptual understanding</p>	<p>2 frogs on each lily pad.</p>     	<p>5 frogs on each lily pad</p> $5 \times 3 = 15$   $5 \times 2 = 2 \times 5$  <p>Link to repeated addition</p>  <p>Arrays</p> <p>2×4 is the same as...</p> 	<p>If I know $10 \times 8 = 80$, then ...</p>  <p>So $13 \times 4 = 10 \times 4 + 3 \times 4$</p>   <p>Grid method</p> <table border="1"> <tr> <td>x</td> <td>200</td> <td>40</td> <td>3</td> <td></td> </tr> <tr> <td>30</td> <td>6000</td> <td>1200</td> <td>90</td> <td>= 7290</td> </tr> <tr> <td>6</td> <td>1200</td> <td>240</td> <td>18</td> <td>= 1458 + 8748</td> </tr> </table>  	x	200	40	3		30	6000	1200	90	= 7290	6	1200	240	18	= 1458 + 8748	<p>43 x 6 by partitioning</p> <table border="1"> <tr> <td>x</td> <td>40</td> <td>3</td> </tr> <tr> <td>6</td> <td>240</td> <td>18</td> </tr> </table> $40 \times 6 = 240$ $3 \times 6 = 18$ $43 \times 6 = 258$  <p>If I know $3 \times 6 = 24$, then 40×6 is 10 times bigger, 40×60 is 100 times bigger</p>	x	40	3	6	240	18	<p>If I know 4×6 then 0.4×6 is ten times smaller and 0.4×0.6 is ten times smaller again</p> 	$\begin{array}{r} 5172 \\ \times 38 \\ \hline 41376 \\ + 155160 \\ \hline 196536 \\ \hline \end{array}$ $\begin{array}{r} 5172 \\ \times 38 \\ \hline 41376 \\ \hline 155160 \\ \hline 196536 \\ \hline \end{array}$
x	200	40	3																								
30	6000	1200	90	= 7290																							
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<p>With jottings ... or in your head</p>	<p>Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher</p>	<p>Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts</p>	<p>Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental methods</p>	<p>Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. Recognise and use factor pairs and commutativity in mental calculations</p>	<p>Multiply and divide numbers mentally drawing upon known facts. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers establish whether a number up to 100 is prime</p>	<p>Perform mental calculations, including with mixed operations and large numbers</p>																					
<p>Just know it!</p>	<p>Count in multiples of twos, fives and tens</p>	<p>Recall and use x and ÷ facts for the 2, 5 and 10 x tables, including recognising odd and even numbers.</p>	<p>Recall and use x and ÷ facts for the 3, 4 and 8 times tables.</p>	<p>Recall x and ÷ facts for x tables up to 12 x 12.</p>	<p>Recall prime numbers up to 19 know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. Recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³)</p>																						
<p>Year</p>	<p>1</p>	<p>2</p>	<p>3</p>	<p>4</p>	<p>5</p>	<p>6</p>																					
<p>Foundations</p>	<p>Count in 2s</p>	<p>2 x table</p>	<p>Review 2x, 5x and 10x</p>	<p>4x, 8x tables 10 times bigger</p>	<p>4x, 8x tables 100, 1000 times bigger</p>	<p>Multiplication facts up to 12 x 12</p>																					
<p>Count in 10s</p>	<p>10 x table</p>	<p>10 x table</p>	<p>4x table</p>	<p>3x, 6x and 12x tables</p>	<p>3x, 6x and 12x tables 10, 100, 1000 times smaller</p>	<p>Partition to multiply mentally</p>																					
<p>Doubles up to 10</p>	<p>Doubles up to 20 and multiples of 5</p>	<p>Doubles up to 20 and multiples of 5</p>	<p>Double two-digit numbers</p>	<p>Double larger numbers and decimals</p>	<p>Double larger numbers and decimals</p>	<p>Double larger numbers and decimals</p>																					
<p>Count in 5s</p>	<p>5 x table</p>	<p>5 x table</p>	<p>8 x table</p>	<p>3x, 9x tables</p>	<p>3x, 9x tables</p>																						
<p>Double multiples of 10</p>	<p>Count in 3s</p>	<p>Count in 3s</p>	<p>3 x table</p>	<p>11x, 7 x tables</p>	<p>11x, 7 x tables Partition to multiply mentally</p>																						
<p>Count in 2s, 5s and 10s</p>	<p>2 x, 5 x and 10 x tables</p>	<p>2 x, 5 x and 10 x tables</p>	<p>6 x table or review others</p>	<p>6x, 12 x tables</p>	<p>6x, 12 x tables</p>																						

Division



<p>Written Methods</p>		<p>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs</p>	<p>Write and calculate mathematical statements for ÷ using the x tables they know progressing to formal written methods.</p>		<p>Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context</p> $194 \div 6$ $\begin{array}{r} 32 \\ 6 \overline{) 194} \\ \underline{18} \\ 14 \\ \underline{12} \\ 20 \\ \underline{18} \\ 2 \end{array}$ $192 \div 6 = 32$	<p>Divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context</p> $564 \div 13$ $\begin{array}{r} 43r5 \\ 13 \overline{) 564} \\ \underline{52} \\ 44 \\ \underline{39} \\ 50 \\ \underline{39} \\ 110 \\ \underline{78} \\ 32 \end{array}$
<p>Developing conceptual understanding</p>	<p>6 ÷ 2 = 3 by sharing into 2 groups and by grabbing groups of 2</p>   	<p>15 ÷ 3 = 5 in each group (sharing)</p>  <p>Link to fractions</p>  <p>15 ÷ 3 = 5 groups of 3 (grouping)</p>  <p>10 ÷ 2 = 5</p>  <p>How many 2s?</p>  <p>Arrays</p> $8 \div 2 = 4$ $8 \div 4 = 2$ 	<p>Grouping using partitioning</p> $43 \div 3$ If I know $10 \times 3 \dots$  <p>Use language of division linked to tables</p> <p>How many 3s?</p> 	<p>Grouping using partitioning</p> $196 \div 6$ If I know $30 \times 6 \dots$  <p>Chunking up on a number line</p> $196 \div 6 = 32 r 4$  <p>Use language of division linked to tables</p>	<p>192 ÷ 6 using place value counters to support written method</p>  <p>Exchange 100 For ten 10s</p>  <p>19 tens in to groups of 6</p>  <p>3 groups so that is 30 x 6, exchange remaining 10 for ten 1s</p>  <p>So $192 \div 6 = 32$</p> 	<p>Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context</p> $564 \div 13 = 43 r 5 = 43 \frac{5}{13} = 43.38\dots$ $\begin{array}{r} 43.38\dots \\ 13 \overline{) 564.00} \\ \underline{52} \\ 44 \\ \underline{39} \\ 50 \\ \underline{39} \\ 110 \\ \underline{78} \\ 32 \end{array}$ <p>...</p> $\begin{array}{r} 52 \\ 44 \\ - 39 \\ 50 \\ - 39 \\ 110 \\ - 78 \\ 32 \end{array}$ <p>= 43.4 (to 1dp)</p>
<p>With jottings</p> <p>... or in your head</p>	<p>Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher</p>	<p>Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</p> <p>Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts</p>	<p>Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental methods</p>	<p>Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers</p> <p>Recognise and use factor pairs and commutativity in mental calculations</p>	<p>Multiply and divide numbers mentally drawing upon known facts</p> <p>Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</p>	<p>Perform mental calculations, including with mixed operations and large numbers</p>
<p>Just know it!</p>	<p>Count in multiples of twos, fives and tens</p>	<p>Recall and use x and ÷ facts for the 2, 5 and 10 x tables, including recognising odd and even numbers.</p>	<p>Recall and use x and ÷ facts for the 3, 4 and 8 times tables.</p>	<p>Recall x and ÷ facts for x tables up to 12 x 12.</p>	<p>Recall prime numbers up to 19 know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</p>	
<p>Year</p>	<p>1</p>	<p>2</p>	<p>3</p>	<p>4</p>	<p>5</p>	<p>6</p>
<p>Foundations</p>	<p>Count back in 2s</p> <p>Count back in 10s</p> <p>Halves up to 10</p> <p>Count back in 5s</p> <p>Halve multiples of 10</p> <p>How many 2s? 5s? 10s?</p>	<p>Division facts (2 x table)</p> <p>Division facts (10 x table)</p> <p>Halves up to 20</p> <p>Division facts (5 x table)</p> <p>Count back in 3s</p> <p>Review division facts (2x, 5x, 10x table)</p>	<p>Review division facts (2x, 5x, 10x table)</p> <p>Division facts (4 x table)</p> <p>Halve two-digit numbers</p> <p>Division facts (8 x table)</p> <p>Division facts (3 x table)</p> <p>Division facts (6 x table) or review others</p>	<p>Division facts (4x, 8x tables) 10 times smaller</p> <p>Division facts (3x, 6 x, 12x tables)</p> <p>Halve larger numbers and decimals</p> <p>Division facts (3x, 9x tables)</p> <p>Division facts (11x, 7x tables)</p> <p>Division facts (6x, 12x tables)</p>	<p>Division facts (4x, 8x tables) 100, 1000 times smaller</p> <p>Division facts (3x, 6 x, 12x tables) Partition to divide mentally</p> <p>Halve larger numbers and decimals</p> <p>Division facts (3x, 9x tables) 100, 1000 times smaller</p> <p>Review division facts (11x, 7x tables) Partition decimals to divide mentally</p> <p>Review division facts (6x, 12x tables) Halve larger numbers and decimals</p>	<p>Division facts (up to 12 x 12)</p> <p>Partition to divide mentally</p> <p>Halve larger numbers and decimals</p>