

Fowey Primary School

Calculation Policy



This policy was developed on: October 2024
The policy will be reviewed in October 2026

Fowey Primary School's - Calculation Policy

This policy is intended to demonstrate how we teach different forms of calculation at Fowey Primary School. It is organised by year groups although some higher ability children may use methods from later year groups. In the KS2 tests at the end of year 6, children are expected to use written formal methods for all four operations (addition, subtraction, multiplication and division).

This policy is designed to help teachers and staff members at the school ensure that calculation is taught consistently across the school and to aid them in helping children who may need extra support or challenges.

This policy is also designed to help parents, carers and other family members support children's learning by letting them know the expectations for their child's year group and by providing an explanation of the methods used in our school.

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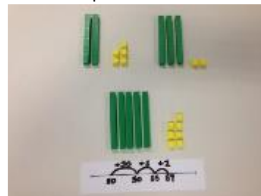
Year 5

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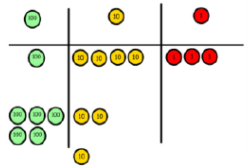
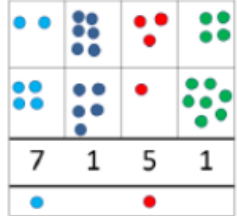
Progression in Calculation – Addition

Year	Curriculum Statutory Requirements	Strategies
Prior Knowledge	Year 1 - Read, write and interpret mathematical statements involving addition (+) and equals (=) signs and relate this to balance sums and scales - Represent and use number bonds and related subtraction facts within 20 - Add one-digit and two-digit numbers to 20, including zero - Solve one-step problems that involve addition, using concrete objects and pictorial representations, and missing number problems such as $9 = \square + 7$.	
	Year 2 - Solve problems with addition using concrete objects and pictorial representations, including those involving numbers, quantities and measures, and applying their increasing knowledge of mental and written methods - Recall and use addition facts to 20 fluently, and derive and use related facts up to 100 - Add 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 - Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot - Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	
	Vocabulary +, add, more, plus, make, sum, total, altogether, double, near double, one more, two more... ten more, how many more to make...? how many more is... than...? how much more is...?	Key resources

Progression in Calculation - Addition

Year	Curriculum Statutory Requirements	Steps to success	Strategies																								
Year 3	By the end of the year, pupils should be taught to: Add numbers mentally including: - a 3-digit number and ones - a 3-digit number and tens - a 3-digit number and hundreds Add numbers with up to three digits, using formal written methods of columnar addition Estimate the answer to a calculation and use inverse operations to check answers Solve problems, including missing number problems, using number facts, place value, and more complex addition.	Step 1 - I can add a three-digit number and 1's mentally. - I can add numbers with up to 3-digit numbers informally. - I can begin to estimate the answer to a question.	Using diennes to partition and count a total 																								
		Step 2 - I can add a three-digit number and 10s (HTU+TU) mentally. - I can add number with up to 3 digits using a formally written method of columnar addition without bridging ten. - I can estimate the answer to my calculation and say whether the answer is likely.	Moving towards drawing pictorial representations of diennes and partitioning 3 digit numbers to add. $143 + 104 = 247$ <table><tr><th>H</th><th>T</th><th>O</th></tr><tr><td>200</td><td>40</td><td>3</td></tr><tr><td>700</td><td>20</td><td>5</td></tr><tr><td>900</td><td>60</td><td>8</td></tr></table>$= 968$ Expanded column addition $466 + 358 =$<table><tr><td>400</td><td>60</td><td>6</td></tr><tr><td>300</td><td>50</td><td>8</td></tr><tr><td>+ 100</td><td>10</td><td></td></tr><tr><td>800</td><td>20</td><td>4</td></tr></table>	H	T	O	200	40	3	700	20	5	900	60	8	400	60	6	300	50	8	+ 100	10		800	20	4
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800	20	4																									
Step 3 - I can add a three-digit number and 100s (HTU+HTU) mentally. - I can add numbers with up to 3 digits using formal methods of columnar addition (moving towards an understanding of bridging to another place value column). - I can link number facts to other calculations (e.g. $6 + 8 = 14$, $8 + 6 = 14$, $14 - 6 = 8$, $14 - 8 = 6$). - I can solve 1 step problems in context, deciding which operation and methods to use and why.	Exploring expanded column method as they move towards the formal compact column method. $\begin{array}{r} 215 \\ + 133 \\ \hline 348 \end{array}$ <table><tr><th>H</th><th>T</th><th>T</th><th>U</th></tr><tr><td>1</td><td>3</td><td>2</td><td>9</td></tr><tr><td>1</td><td>0</td><td>0</td><td>3</td></tr><tr><td>1</td><td>0</td><td>0</td><td>5</td></tr><tr><td>2</td><td>0</td><td>0</td><td>11</td></tr></table>$= 161$ <table><tr><td>146</td><td>48</td></tr><tr><td>+ 527</td><td>+ 36</td></tr><tr><td></td><td>84</td></tr></table> 1	H	T	T	U	1	3	2	9	1	0	0	3	1	0	0	5	2	0	0	11	146	48	+ 527	+ 36		84
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Progression in Calculation - Addition

Year	Curriculum Statutory Requirements	Steps to success	Strategies																																
Year 4	By the end of the year, pupils should be taught to: - Add with up to 4 digits using the formal written methods of columnar addition where appropriate. - Estimate and use inverse operations to check answers to a calculation - Solve two-step problems addition in contexts, deciding which operations and methods to use and why.	Step 1 - I can add 3-digit numbers using columnar addition (including bridging 10). - I can solve simple addition problems.	Expanded column addition 1466 + 4868 = <table><tr><td>1000</td><td>400</td><td>60</td><td>6</td></tr><tr><td>4000</td><td>800</td><td>60</td><td>8</td></tr><tr><td>+ 1000</td><td>100</td><td>10</td><td></td></tr><tr><td>6000</td><td>300</td><td>30</td><td>4</td></tr></table>  <table><tr><td></td><td>H</td><td>T</td><td>O</td></tr><tr><td>146</td><td>400</td><td>20</td><td>7</td></tr><tr><td>+ 527</td><td>300</td><td>40</td><td>5</td></tr><tr><td></td><td>700</td><td>60</td><td>12</td></tr></table>	1000	400	60	6	4000	800	60	8	+ 1000	100	10		6000	300	30	4		H	T	O	146	400	20	7	+ 527	300	40	5		700	60	12
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Step 2 - I can add 3-digit numbers using columnar addition (including bridging 10 and 100). - I can find fact families for an addition fact. - I am beginning to estimate the answer to a calculation - I can solve one-step problems in contexts, deciding which operations to use and why	<table><tr><td>215</td></tr><tr><td>+ 133</td></tr><tr><td>8 (5 + 3 = 8)</td></tr><tr><td>40 (10 + 30 = 40)</td></tr><tr><td>300 (200 + 100 = 300)</td></tr><tr><td>348</td></tr></table> 	215	+ 133	8 (5 + 3 = 8)	40 (10 + 30 = 40)	300 (200 + 100 = 300)	348																												
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Step 3 - I can add up to 4-digit numbers using columnar addition (including bridging 100) - I can use inverses in number problems (e.g. I think of a number and add 3) - I can estimate the answer to a calculation and say whether my answer is likely - I can solve more complex one-step problems in contexts, deciding which operations to use and why	<table><tr><td>47</td><td>258</td><td>366</td></tr><tr><td>+ 76</td><td>+ 87</td><td>+ 458</td></tr><tr><td>123</td><td>345</td><td>824</td></tr><tr><td>11</td><td>11</td><td>11</td></tr></table>	47	258	366	+ 76	+ 87	+ 458	123	345	824	11	11	11																						
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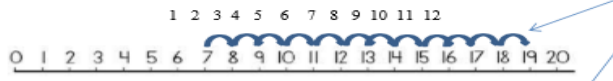
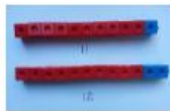
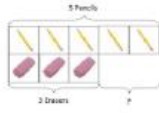
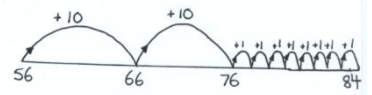
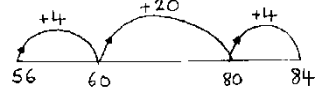
Progression in Calculation - Addition

Year	Curriculum Statutory Requirements	Steps to success	Strategies																																	
Year 5	By the end of the year, pupils should be taught to: - Add whole numbers with more than 4 digits, including using formal written methods (columnar addition) - Add numbers mentally with increasingly large numbers - Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy - Solve addition multi-step problems in contexts, deciding which operations and methods to use and why	Step 1 - I can add and subtract 4-digit numbers using columnar addition (including bridging 10/100/1000) - I can add mentally a three-digit number and a single digit number - I can solve one-step problems in contexts, deciding which operations to use and why	NC – end of year 6 expected method (examples from NC) 789 + 642 becomes <table><tr><td>7</td><td>8</td><td>9</td></tr><tr><td>+</td><td>6</td><td>4</td><td>2</td></tr><tr><td colspan="4"> </td></tr><tr><td>1</td><td>4</td><td>3</td><td>1</td></tr><tr><td colspan="2"> </td><td colspan="2">1 1</td></tr></table> Answer: 1431	7	8	9	+	6	4	2					1	4	3	1			1 1															
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Step 2 - I can add and subtract 4-digit numbers using columnar addition (including bridging 10/100/1000) - I can add mentally a three-digit number and a multiple of 10 - I am beginning to use rounding to +estimate the answer to a calculation - I can solve more complex one-step problems in contexts, deciding which operations to use and why	To answer 3252 + 3700, I can round to the nearest hundred or thousand to estimate the answer. <table><tr><td></td><td>TTh</td><td>Th</td><td>H</td><td>T</td><td>O</td><td></td></tr><tr><td></td><td>4</td><td>3</td><td>2</td><td>0</td><td>1</td><td>.</td></tr><tr><td></td><td>2</td><td>2</td><td>1</td><td>2</td><td>4</td><td></td></tr><tr><td>+</td><td>3</td><td>1</td><td>3</td><td>2</td><td>1</td><td></td></tr><tr><td></td><td>9</td><td>6</td><td>6</td><td>4</td><td>6</td><td></td></tr></table>		TTh	Th	H	T	O			4	3	2	0	1	.		2	2	1	2	4		+	3	1	3	2	1			9	6	6	4	6	
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Step 3 - I can add and subtract 4-digit numbers using columnar addition (including bridging 10/100/1000) - I can add mentally a three-digit number and a multiple of a hundred - I can estimate the answer to a calculation using rounding and say whether my answer is likely - I can solve addition and subtraction two-step problems in contexts, deciding which operations to use and why	The answer to this calculation is likely to be near £31 because 24 + 7 = 31. <table><tr><td></td><td>£</td><td>2</td><td>3</td><td>.</td><td>5</td><td>9</td></tr><tr><td>+</td><td>£</td><td></td><td>7</td><td>.</td><td>5</td><td>5</td></tr><tr><td></td><td>£</td><td>3</td><td>1</td><td>.</td><td>1</td><td>4</td></tr><tr><td></td><td></td><td>1</td><td>1</td><td></td><td>1</td><td></td></tr></table>		£	2	3	.	5	9	+	£		7	.	5	5		£	3	1	.	1	4			1	1		1								
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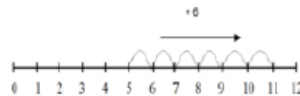
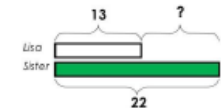
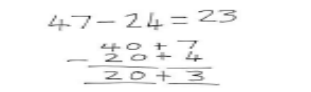
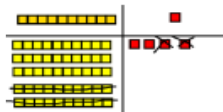
Progression in Calculation - Addition

Year	Curriculum Statutory Requirements	Steps to success	Strategies
Year 6	By the end of the year, pupils should be taught to: - Solve addition multi-step problems in contexts, deciding which operations and methods to use and why - Solve problems involving addition - Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy	Step 1 I can add and subtract 5-digit numbers using columnar addition (including bridging 10/100/1000/10000).	NC – end of year 6 expected method (examples from NC) 789 + 642 becomes 789 + 642 1431 Answer: 1431
		Step 2 - I can add and subtract 5-digit numbers with decimals using columnar addition (including bridging 10/100/1000/10000). - I can add and subtract multiples of 10 and 100 to three- and four-digit numbers mentally. - I can use brackets in simple calculations. - I can solve more complex one step problems in context deciding which operations to use and why. - I can check whether my answer is likely.	The answer to this calculation is likely to be near 240 because 125 + 115 = 240. 124.9 + 117.25 242.15 11
		Step 3 - I can add and subtract numbers of different lengths with decimals using columnar addition (including bridging where necessary). - I can add and subtract numbers mentally with increasingly large numbers. - I can use brackets and inverses effectively e.g. (24+P) x 6 = 150. - I can solve addition and subtraction twostep problems in context deciding which operations and methods to use and why. - I can use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.	Numbers can be carried above or below but should be crossed out when they have been added. TThThH T O . t h 455.52 + 20528.20 20983.72
Vocabulary		Key resources	
add, addition, more, plus, increase, sum, total, altogether, double, near double, how many more to make...? inverse, primes, prime factors, composite numbers equals, sign, is the same as			

Progression in Calculation – Subtraction

Year	Curriculum Statutory Requirements	Strategies
Prior Knowledge	Year 1 - Read, write and interpret mathematical statements involving subtraction (-) and equals (=) signs - Represent and use number bonds and related subtraction facts within 20 - Subtract one-digit and two-digit numbers to 20, including zero - Solve one-step problems that involve subtraction, using concrete objects and pictorial representations, and missing number problems such as $9 = \square - 7$.	Sam spent 7p. What was his change from 20p?  Children use concrete, practical resources moving to images and physically 'cross off' or remove to ensure a real understanding of 'taking away'. Pupils begin to explore missing number problems involving – and = notation. $\begin{array}{ll} 7 - 3 = \square & \square = 7 - 3 \\ 7 - \square = 4 & 4 = \square - 3 \\ \square - 3 = 4 & 4 = 7 - \square \\ \square - \nabla = 4 & 4 = \square - \nabla \end{array}$ Solving a problem such as: $19 - 7 =$ Using counting on to find the difference. 
	Year 2 - Solve problems with subtraction: - using concrete objects and pictorial representations, including those involving numbers, quantities and measures applying their increasing knowledge of mental and written methods - Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100 - 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 - Subtracting three one-digit numbers - Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot - Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	Compare amounts and objects to find the difference.  Use cubes to build towers or make bars to find the difference  Use basic bar models with items to find the difference Counting up from the smaller to the larger number (complementary addition) To be taught to support mental calculation and when the numbers are close together. $84 - 56$ $56 + 4 + 20 + 4 = 84$   or
Vocabulary +, add, more, plus, make, sum, total, altogether, double, near double, one more, two more... ten more, how many more to make...? how many more is... than...? how much more is...?		Key resources

Progression in Calculation – Subtraction

Year	Curriculum Statutory Requirements	Steps to success	Strategies
Year 3	By the end of the year, pupils should be taught to: - Subtract numbers mentally, including: - a three-digit number and ones - a three-digit number and tens - a three-digit number and hundreds - Subtract numbers with up to three digits, using formal written methods of columnar subtraction - Estimate the answer to a calculation and use inverse operations to check answers - Solve problems, including missing number problems, using number facts, place value, and more complex subtraction.	Step 1 - I can subtract up to 3-digit numbers informally - I can begin to estimate the answer to a calculation	 Count on to find the difference. Comparison Bar Models Draw bars to find the difference between 2 numbers. Lisa is 13 years old. Her sister is 22 years old. Find the difference in age between them. 
		Step 2 - I can subtract numbers with 2 digits, using formal written method of columnar subtraction without bridging 10 - I can estimate the answer to a calculation and say whether my answer is likely - I can solve simple subtraction problems	 This will lead to a clear written column subtraction.   Draw the Base 10 or place value counters alongside the written calculation to help to show working.
		Step 3 - I can subtract numbers with 3 digits, using the formal written method of columnar subtraction - I can make all related number sequences (e.g. 14 – 6 = 8, 14 – 8 = 6, 6+8=14, 8+6=14) - Solve one step problems in context, deciding which operations and methods to use and why	247 – 122 = 125 200+40+7 <u>100+20+2</u> <u>100+20+5</u> This will lead to a clear written column subtraction 247 - <u>122</u> <u>125</u>
Vocabulary Take (away), leave, how many are left/left over? How many have gone? One less, two less... ten less...How many fewer is...than...? Difference between is the same as, Subtract, minus, how much less is? Half, halve, Equals, sign, One hundred less, Tens boundary, Subtraction, Hundreds boundary		Key resources	

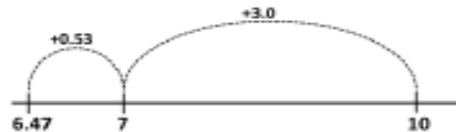
Progression in Calculation - Subtraction

Year	Curriculum Statutory Requirements	Steps to success	Strategies
Year 4	By the end of the year, pupils should be taught to: - Subtract with up to 4 digits using the formal written methods of columnar subtraction where appropriate - Estimate and use inverse operations to check answers to a calculation - Solve subtraction two-step problems in contexts, deciding which operations and methods to use and why.	Step 1 -I can subtract 3-digit numbers using columnar subtraction without bridging 10. - I can solve simple subtraction problems.	346 - 120 226
		Step 2 -I can subtract 3-digit numbers using columnar methods. - I can find fact families for subtraction facts. - I am beginning to estimate the answer to a calculation. - I can solve one-step problems in contexts, deciding which operations to use and why.	Calculations 234 - 88 Start with the ones, can I take away 8 from 4 easily? I need to exchange one of my tens for ten ones. Calculations 234 - 88 Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make. When confident, children can find their own way to record the exchange/regrouping. Just writing the numbers as shown here shows that the child understands the method and knows when to exchange/regroup.
		Step 3 -I can subtract up to 4-digit numbers using columnar methods. - I can use inverses in number problems (e.g. I think of a number and add 3). - I can estimate the answer to a calculation and say whether my answer is likely. - I can solve more complex one-step problems in contexts, deciding which operations to use and why.	Column subtraction 942-214 Expanded method 900 40 2 - 200 10 4 700 20 8 Compact Method 942 - 214 728
Vocabulary Take (away), leave, how many are left/left over? How many have gone? One less, two less... ten less...How many fewer is...than...? Difference between is the same as, Subtract, minus, how much less is? Half, halve, Equals, sign, one hundred less, Tens boundary, Subtraction, Hundreds boundary, decrease, Inverse		Key resources	

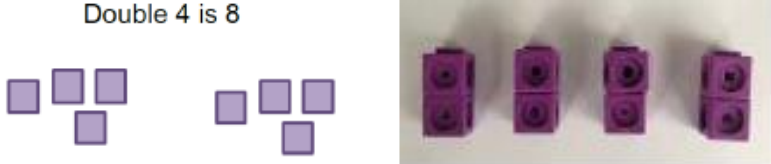
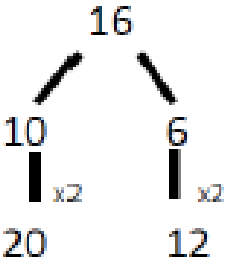
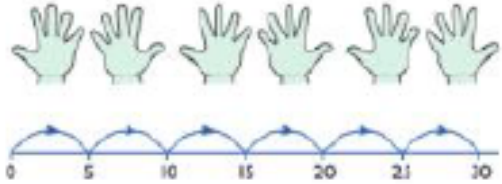
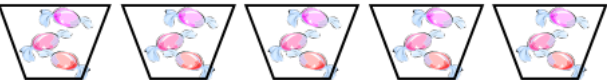
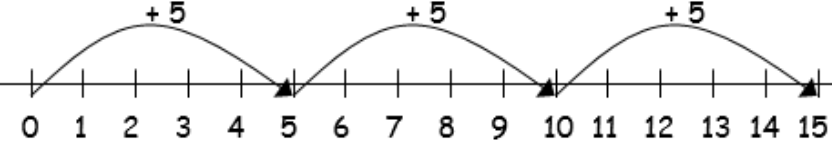
Progression in Calculation - Subtraction

Year	Curriculum Statutory Requirements	Steps to success	Strategies
Year 5	By the end of the year, pupils should be taught to: - Subtract whole numbers with more than 4 digits, including using formal written methods (columnar subtraction) - Subtract numbers mentally with increasingly large numbers - Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy - Solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why.	Step 1 -I can add and subtract 3-digit numbers using columnar subtraction - I can solve one-step problems in contexts, deciding which operations to use and why	Column subtraction 942—214 Expanded method 900 40 2 - 200 10 4 700 20 8 Compact Method 942 - 214 728
		Step 2 - I can subtract 3-digit numbers using columnar subtraction - I am beginning to use rounding to estimate the answer to a calculation - I can solve more complex one-step problems in contexts, deciding which operations to use and why	NC – end of year 6 expected method (examples from NC) 874 – 523 becomes 874 - 523 351 Answer: 351 932 – 457 becomes 932 - 457 475 Answer: 475
		Step 3 -I can add and subtract numbers up to 4 digits using columnar addition - I can estimate the answer to a calculation using rounding and say whether my answer is likely -I can solve addition and subtraction two-step problems in contexts, deciding which operations to use and why	512 - 263 249 105 - 56 49
Vocabulary Take (away), leave, how many are left/left over? How many have gone? One less, two less... ten less...How many fewer is...than...? Difference between is the same as, Subtract, minus, how much less is? Half, halve, Equals, sign, one hundred less, Tens boundary, Subtraction, Hundreds boundary, decrease, Inverse			Key resources

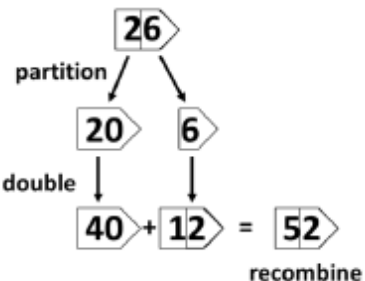
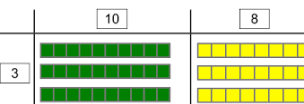
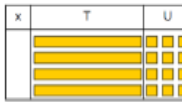
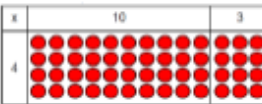
Progression in Calculation - Subtraction

Year	Curriculum Statutory Requirements	Steps to success	Strategies																																									
Year 6	By the end of the year, pupils should be taught to: - Solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why. - Solve problems involving subtraction - Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy	Step 1 -I can solve subtraction problems																																										
		Step 2 - I can subtract multiples of 10 and 100 to three and four digit numbers mentally - I can use brackets in simple calculations - I can solve more complex one step problems in context deciding which operations to use and why - I can check whether my answer is likely	$10 - 6.47 =$ $6(8-4)= 24$ 1. How will Maths Frog work out this subtraction? 2. Draft an empty number line jotting to show a hop from 6.47 to 6.5 then to 7 or one hop straight from 6.47 to 7. Then show a hop from 7 to 10. 																																									
		Step 3 -Subtract numbers mentally with increasingly large numbers -I can use brackets and inverses effectively e.g. $(24+P) \times 6 = 150$ - I can solve addition and subtraction two-step problems in context deciding which operations and methods to use and why -I can use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	NC – end of year 6 expected method (examples from NC) $874 - 523$ becomes <table><tr><td>8</td><td>7</td><td>4</td></tr><tr><td>-</td><td>5</td><td>2</td><td>3</td></tr><tr><td colspan="4"> </td></tr><tr><td>3</td><td>5</td><td>1</td><td></td></tr><tr><td colspan="4"> </td></tr></table> Answer: 351 $932 - 457$ becomes <table><tr><td>8</td><td>1</td><td>2</td><td>1</td></tr><tr><td>9</td><td>3</td><td>2</td><td></td></tr><tr><td>-</td><td>4</td><td>5</td><td>7</td></tr><tr><td colspan="4"> </td></tr><tr><td>4</td><td>7</td><td>5</td><td></td></tr><tr><td colspan="4"> </td></tr></table> Answer: 475	8	7	4	-	5	2	3					3	5	1						8	1	2	1	9	3	2		-	4	5	7					4	7	5			
8	7	4																																										
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8	1	2	1																																									
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-	4	5	7																																									
4	7	5																																										
Vocabulary Take (away), leave, how many are left/left over? How many have gone? One less, two less... ten less...How many fewer is...than...? Difference between is the same as, Subtract, minus, how much less is? Half, halve, Equals, sign, One hundred less, Tens boundary, Subtraction, Hundreds boundary, Decrease. Inverse. Units boundary. Tenths boundary			Key resources																																									

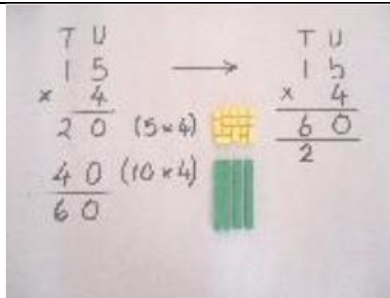
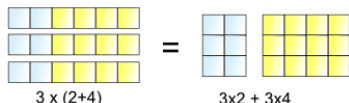
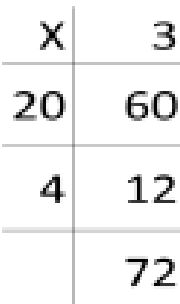
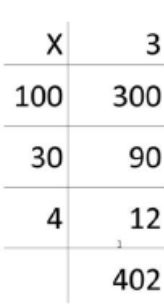
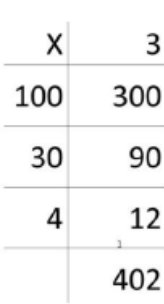
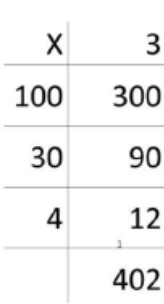
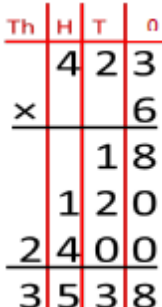
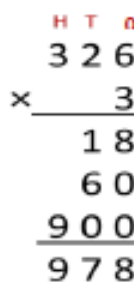
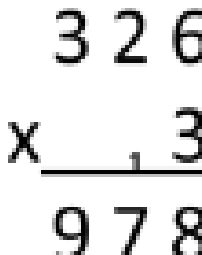
Progression in Calculation - Multiplication

Year	Curriculum Statutory Requirements	Strategies
Prior Knowledge	Year 1 Solve one-step problems involving multiplication, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	Double 4 is 8 
	Year 2 - Recall and use multiplication facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers - Calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (×) and equals (=) signs - 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.	  Partition a number and then double each part before recombining it back together.   $5 \times 3 = 15$ $3 \times 5 = 15$ 
	Vocabulary	Key resources

Progression in Calculation - Multiplication

Year	Curriculum Statutory Requirements	Steps to success	Strategies																										
Year 3	By the end of the year, pupils should be taught to: - Recall and use multiplication facts for the 3, 4 and 8 multiplication tables - Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods - Solve problems involving missing number problems involving multiplication including positive number scaling problems and correspondence problems where n objects are connected to m objects.	Step 1 - I can count in 2s and then double these facts to find multiples of 4. - I can relate times table facts to multiples of 10, e.g. 2x3=6 so 2x30=60; 6÷2=3 so 60÷2=30. - I can find a division fact from a multiplication fact.	 5 + 5 + 5 = 15 3 + 3 + 3 + 3 + 3 = 15 5 x 3 = 15 3 x 5 = 15  partition 26 20 6 double 40 12 = 52 recombine																										
		Step 2 - I know my 5 x table and can count in 10s knowing that these are double 5x facts. - I can mentally calculate TU x U and TU ÷ U using my times table facts using jottings to support - I can find the associated number statements for a given number fact.	Grid method  <table><tr><td>x</td><td>30</td><td>5</td></tr><tr><td>7</td><td>210</td><td>35</td></tr></table> 210 + 35 = 245 <table><tr><td>x</td><td>3</td></tr><tr><td>20</td><td>60</td></tr><tr><td>4</td><td>12</td></tr><tr><td></td><td>72</td></tr></table>	x	30	5	7	210	35	x	3	20	60	4	12		72												
		x	30	5																									
7	210	35																											
x	3																												
20	60																												
4	12																												
	72																												
Step 3 - I can use my 2 and 4 times tables to find 8x - I know my 3 times tables - I can mentally calculate TU x U and TU ÷ U using my times table facts - I can use inverses in number problems E.g. I think of a number, double it and add 5. The answer is 35. What was my number?	Expanded Method <table><tr><td>23</td><td></td></tr><tr><td>x 4</td><td></td></tr><tr><td>12</td><td>(4 x 3 = 12)</td></tr><tr><td>+ 80</td><td>(4 x 20 = 80)</td></tr><tr><td>92</td><td></td></tr></table> <table><tr><td></td><td></td><td>T O</td></tr><tr><td></td><td></td><td>3 4</td></tr><tr><td></td><td></td><td>X 3</td></tr><tr><td></td><td></td><td>1 2</td></tr><tr><td></td><td></td><td>9 0</td></tr><tr><td>1</td><td>0</td><td>2</td></tr></table>	23		x 4		12	(4 x 3 = 12)	+ 80	(4 x 20 = 80)	92				T O			3 4			X 3			1 2			9 0	1	0	2
23																													
x 4																													
12	(4 x 3 = 12)																												
+ 80	(4 x 20 = 80)																												
92																													
		T O																											
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		X 3																											
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		9 0																											
1	0	2																											
Vocabulary Lots of, groups of, x, times, multiplication, multiply, multiplied by, multiple of, product, once, twice, three times, four times, five times... ten times..., times as (big, long, wide and so on), repeated addition, array, row, column, double, halve, share, share equally, one each, two each, three each..., group in pairs, threes... tens equal groups of, ÷, divide, division, divided by, divided into, left, left over, remainder, product.		Key resources																											

Progression in Calculation - Multiplication

Year	Curriculum Statutory Requirements	Steps to success	Strategies
Year 4	By the end of the year, pupils should be taught to: - Recall and use multiplication facts for multiplication tables up to 12 x 12 - Use place value, known and derived facts to multiply mentally, including: x0 x1 and multiplying together three numbers - Recognise and use factor pairs and commutativity in mental calculations - Multiply two-digit and three-digit numbers by a one-digit number using formal written layout - Solve problems involving multiplying, including the distributive law to multiply two-digit numbers by one digit including positive number scaling problems and correspondence problems where n objects are connected to m objects.	Step 1 - I can recall multiplication and division facts for the 2, 5 and 10 x table. - I can multiply and divide using practical resources.	 
		Step 2 - I can recall multiplication and division facts for the 2, 3, 4, 5, 6, and 10 x table. - I can find factors for numbers to 20 (investigated using factor trees). - I can multiply and divide a two-digit number by a one-digit number using an informal method (e.g. number line). - I can multiply a whole number by 10.	    
		Step 3 - I can recall multiplication and division facts for the 7, 8 and 9 x table - I can use my multiplication tables knowledge to calculate with multiples of ten - I can find factors for numbers to 50 - I can multiply and divide a two-digit number by a one-digit number using a formal layout	 
		Vocabulary Lots of, groups of, times, multiplication, multiply, multiplied by, multiple of, product, once, twice, three times, four times, five times... ten times, times as (big, long, wide, and so on), repeated addition, array, row, column, double, halve, share, share equally, one each, two each, three each..., group in pairs, threes... tens, equal groups of, divide, division, divided by, divided into, divisible by, remainder, factor, quotient inverse	

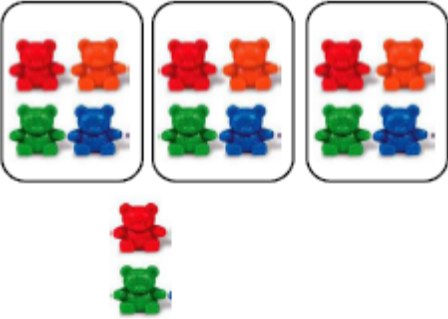
Progression in Calculation – Multiplication

Year	Curriculum Statutory Requirements	Steps to success	Strategies
Year 5	By the end of the year, pupils should be taught to: - Identify multiples and factors: all factor pairs of a number, common factors of two numbers, establish whether a number up to 100 is prime and recall prime numbers up to 19. - Multiply numbers up to four digits by a one or two-digit number using a formal written method. - Multiply whole numbers and those involving decimals by 10, 100 and 1000. - Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) - Solve problems involving multiplication, including using their knowledge of factors and multiples, squares and cubes	Step 1 - I can find factors for numbers to 20. - I can recall multiplication and division facts for the 2, 3, 4, 5, 6, and 10 x table. - I can solve one-step problems in contexts, deciding which operations to use and why.	Variation ideas $6 \times 7 =$ $6 \times 70 =$ $6 \times 700 =$ $60 \times 7 =$ $? = 600 \times 7$ $0.6 \times 7 =$ $\begin{array}{r} 326 \\ \times \quad 3 \\ \hline 978 \end{array}$
		Step 2 - I can find factors for numbers to 50. - I can recall multiplication and division facts for the 7, 8 and 9 x table. - I can solve more complex one-step problems in contexts, deciding which operations to use and why.	
		Step 3 - I can recognise and use factor pairs and commutativity in mental calculations. - I can recall multiplication and division facts up to 12x12. - I can solve multiplication and division two-step problems in contexts, deciding which operations to use and why. - I can solve problems involving multiplying and adding, including integer scaling problems. - I can multiply numbers up to four digits by a one or two-digit number using a formal written method.	$\begin{array}{r} 24 \\ \times 16 \\ \hline 14^24 \\ 240 \\ \hline 384 \end{array}$
Vocabulary Lots of, groups of, times, multiplication, multiply, multiplied by, multiple of, product, once, twice, three times, four times, five times... ten times, times as (big, long, wide, and so on), repeated addition, array, row, column, double, halve, share, share equally, one each, two each, three each..., group in pairs, threes... tens, equal groups of, divide, division, divided by, divided into, divisible by, remainder, factor, quotient inverse, Divisible by, Factor, Quotient, Inverse		Key resources	

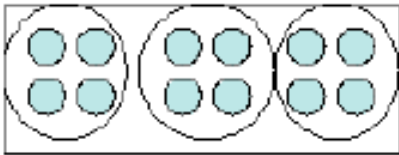
Progression in Calculation - Multiplication

Year	Curriculum Statutory Requirements	Steps to success	Strategies
Year 6	By the end of the year, pupils should be taught to: - Perform mental calculations, including with mixed operations and large numbers - Identify multi-digit numbers up to 4 digits by a two-digit number using formal, long multiplication. - Identify common factors, common multiples and common prime numbers. - Use their knowledge of the order of operations to carry out calculations involving the four operations.	Step 1 - I can recall all times tables up to 12 x 12 and know related division facts. - Recall and use multiplication and division facts up to 12 x 12. - I can use knowledge of times tables and place value to multiply U.t by U e.g. $0.6 \times 4 = 2.4$.	NC – end of year 6 expected method (examples from NC) Short multiplication 24 x 6 becomes $\begin{array}{r} 24 \\ \times 6 \\ \hline 144 \end{array}$ Answer: 144 342 x 7 becomes $\begin{array}{r} 342 \\ \times 7 \\ \hline 2394 \end{array}$ Answer: 2394 2741 x 6 becomes $\begin{array}{r} 2741 \\ \times 6 \\ \hline 16446 \end{array}$ Answer: 16 446
		Step 2 - I can multiply larger numbers (<10,000) by single-digit numbers using short multiplication. - Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 1 and 0; dividing by 1; multiplying together three numbers. - I know multiples, factors, square numbers prime numbers. - I can use brackets in simple calculations. - I can use knowledge of times tables and place value to multiply TU.t by U e.g. $0.06 \times 4 = 0.24$. - I can check whether my answer is likely.	NC – end of year 6 expected method (examples from NC) Long multiplication 24 x 16 becomes $\begin{array}{r} 24 \\ \times 16 \\ \hline 144 \\ 240 \\ \hline 384 \end{array}$ Answer: 384 124 x 26 becomes $\begin{array}{r} 124 \\ \times 26 \\ \hline 744 \\ 2480 \\ \hline 3224 \end{array}$ Answer: 3224 124 x 26 becomes $\begin{array}{r} 124 \\ \times 26 \\ \hline 744 \\ 2480 \\ \hline 3224 \end{array}$ Answer: 3224
		Step 3 - I can multiply decimals by a single-digit number using short multiplication. - I can multiply and divide numbers mentally drawing on known facts. - I can identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. - I can use brackets and inverses effectively e.g. $(24 \div P) \times 6 = 150$. - Multiply one-digit numbers with one decimal place by whole numbers. - I can use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.	$\begin{array}{r} 36 \\ \times 17 \\ \hline 53 \\ 615 \\ \hline 612 \end{array}$ $\begin{array}{r} 21 \\ \times 47 \\ \hline 147 \\ 840 \\ \hline 987 \end{array}$
		Vocabulary Lots of, groups of, times, multiplication, multiply, multiplied by, multiple of, product, once, twice, three times, four times, five times... ten times, times as (big, long, wide, and so on), repeated addition, array, row, column, double, halve, share, share equally, one each, two each, three each..., group in pairs, threes... tens, equal groups of, divide, division, divided by, divided into, divisible by, remainder, factor, quotient, inverse, Divisible by, Factor, Quotient, Inverse	Key resources

Progression in Calculation - Division

Year	Curriculum Statutory Requirements	Strategies
Prior Knowledge	Year 1 Solve one-step problems involving division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	 Link division to multiplication by creating an array and thinking about the number sentences that can be created. Eg $15 \div 3 = 5$ $5 \times 3 = 15$ $15 \div 5 = 3$ $3 \times 5 = 15$
	Year 2 - Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables - Recognising odd and even numbers - Calculate mathematical statements for division within the multiplication tables and write them using the signs $\div$ and $=$ - Show that multiplication of two numbers is commutative but division is not - Solve problems involving division using materials, arrays, repeated addition, mental methods and division facts, including problems in contexts.	$14 \div 3 =$ Divide objects between groups and see how much is left over 
Vocabulary +, add, more, plus, make, sum, total, altogether, double, near double, one more, two more... ten more, how many more to make...? how many more is... than...? how much more is...?		Key resources

Progression in Calculation - Division

Year	Curriculum Statutory Requirements	Steps to success	Strategies
Year 3	By the end of the year, pupils should be taught to: - Recall and use multiplication and division facts for the 3, 4, 8x tables. - Write and calculate mathematical statements for division using the multiplication tables they know, including 2-digit divided by 1-digit using mental and progressing to formal written methods - Solve problems, involving missing number problems, division, including positive number scaling problems and correspondence problems where n objects are connected to m objects.	Step 1 - I know my 2, 5 and 10 times tables and related division facts and use these to solve problems. - I can find half of a given number using partitioning. - I can relate multiplication/ division facts to multiples of 10, e.g. 2x3=6 so 2x30=60; 6÷2=3 so 60÷2=30 - I can find a division fact from a multiplication fact	
		Step 2 I can count in 3, 4 and 8 * I can mentally calculate TU ÷ U using my times table facts using jottings to support and using my knowledge of 10x to support me.	20 ÷ 5 = ? 5 x ? = 20
		Step 3 - I know my 3, 4, 8 and 9 times tables and related division facts. - I can mentally calculate TU ÷ U using my times table facts - I can use inverses in number problems e.g. I think of a number, double it and add 5. The answer is 35. What was my number? - Solve problems, including missing number problems, involving division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects	28 ÷ 7 = 4 Divide 28 into 7 groups. How many are in each group?
Vocabulary		Key resources	
Remainder, divisor, factor			

Progression in Calculation - Division

Year	Curriculum Statutory Requirements	Steps to success	Strategies								
Year 4	By the end of the year, pupils should be taught to: - Recall multiplication and division facts up to 12×12. - Use place value, known and derived facts to divide mentally, including dividing by 1. - Solve problems involving dividing a three-digit number by one-digit and number using a formal layout.	Step 1 - I can recall multiplication and division facts for the 2, 3, 4, 5, 6, and 10 x table - I can use place value to divide by 1 and 10. - I can divide a two-digit number by a one digit number using an informal method Step 2 - I can recall multiplication and division facts for the 7, 8 and 9 x table - I can find factors for numbers to 20 - I can divide two- and three-digit numbers by one-digit number using a formal layout Step 3 - I can recall multiplication and division facts for multiplication tables up to 12×12 - I can find factors for numbers to 50 - I can divide a three-digit number by a one-digit number using a formal layout (short division) - I can divide a whole number by 10 and 100 with a whole number answer, explaining what is happening and why	Find the inverse of multiplication and division sentences by creating four linking number sentences. $7 \times 4 = 28$ $4 \times 7 = 28$ $28 \div 7 = 4$ $28 \div 4 = 7$ <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td colspan="4">28</td></tr> <tr><td>7</td><td>7</td><td>7</td><td>7</td></tr> </table> $\begin{array}{r} 21 \\ 4 \overline{) 84} \end{array}$ $\begin{array}{r} 218 \\ 4 \overline{) 872} \end{array}$	28				7	7	7	7
28											
7	7	7	7								
Vocabulary divisible, divisible by, factor, factor quotient, inverse, fact boxes, divisor		Key resources									

Progression in Calculation - Division

Year	Curriculum Statutory Requirements	Steps to success	Strategies
Year 5	By the end of the year, pupils should be taught to: - Identify multiples and factors, including: - finding all factor pairs of a number - common factors of two numbers - know and use the vocabulary of prime numbers and establish whether a number up to 100 is prime - Multiply and divide numbers mentally drawing on known facts - Divide numbers up to 4 digits by a one-digit number using a written method and interpret remainders appropriately for the context - Divide whole numbers and those involving decimals by 10, 100 and 1000. - Solve problems involving division, including using their knowledge of factors and multiples, squares and cubes	Step 1 - I can find factors for numbers to 20 - I can recall multiplication and division facts for the 2, 3, 4, 5, 6, and 10 x table - I can divide a two-digit number by a one-digit number using short division - I can solve one-step problems in contexts, deciding which operations to use and why	98 ÷ 7 becomes 14 7 98 Answer: 14
		Step 2 - I can find factors for numbers to 50 - I can recall multiplication and division facts for the 7, 8 and 9 x table - I can divide a two-digit number by a one-digit number using short division - I can solve more complex one-step problems in contexts, deciding which operations to use and why	
		Step 3 - I can recognise and use factor pairs and commutativity in mental calculations - I can recall multiplication and division facts up to 12x12 - I can divide a three-digit number by a one-digit number using short division - I can solve multiplication and division twostep problems in contexts, deciding which operations to use and why - I can solve problems involving multiplying and adding, including integer scaling problems	872 ÷ 4 becomes 218 4 872 Divide numbers up to 4 digits by a one-digit number using a written method and interpret remainders appropriately for the context. 86r2 5 432
		Vocabulary	

Progression in Calculation - Division

Year	Curriculum Statutory Requirements	Steps to success	Strategies
Year 6	By the end of the year, pupils should be taught to: - Perform mental calculations, including with mixed operations and large numbers - Divide numbers up to 4 digits by a two-digit number using the formal written method of long division - Interpret remainders as whole number remainders, fractions, or by rounding as appropriate for the context. - Divide numbers up to 4 digits by a two-digit number using the formal written method of short division as appropriate.	Step 1 - I can recall all times tables up to 12 x 12 and know related division facts. - I can recall and use x and ÷ facts up to 12 x 12 - I can use knowledge of times tables and place value to divide - I can divide HTU by U where there is a remainder.	86r2 3 5432
		Step 2 - I can recall all ÷ facts related to times tables up to 12 x 12 - I can use place value, known and derived facts to divide mentally, including dividing by 1 - I know multiples, factors and prime numbers - I can use brackets in simple calculations - I can use knowledge of times tables and place value to divide e.g. 480 ÷ 4 = 120 so 48 ÷ 4 = 12 - I can check whether my answer is likely - I divide HTU by TU where the remainder is recorded as a fraction.	496 ÷ 11 becomes 45r1 5 11496 Answer: 45 ¹/₁₁ Progressing to long division to find a decimal remainder:
		Step 3 - I can divide a two-digit number by 2,3,4,5, and 10 with whole number answers and remainders - I can divide numbers mentally drawing on known facts to maintain fluency. - I can identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers - I can use brackets and inverses effectively e.g. (24÷P) x 6 = 150 - I can use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy - I can explore the order of operations using brackets - I divide HTU by T U where the remainder is recorded as a decimal.	28.8 15432.0 15 30 45 60 75 90 105 120 Simplify this method
Vocabulary		Key resources	