Vernon Primary School

Calculation Policy

Rationale and Aims

This policy outlines both the mental and written methods to be taught from Year 1 to Year 6. It is designed to provide pupils with a consistent and smooth progression in learning the four operations. The policy ensures that all children have a unified experience in their learning of calculations across the school. Children should have the opportunity to explore different methods at a time in their learning that is suitable for them. All members of staff will follow the progression in calculations to maintain a consistent approach in mathematics teaching. This will enable all children to progress well, build confidence in calculating, and become successful mathematicians.

The policy breaks down the progression for the four operations: addition, subtraction, multiplication, and division. These are flexible regarding when they should be introduced. Teaching should be pitched at a level appropriate to the individual class and child. This means that in some instances, teachers may need to look further ahead for next steps, or revisit previous stages to ensure that each child makes progress.
The maths curriculum emphasises the need for formal methods of calculation. At Vernon Primary, we believe that children should be introduced to these methods when they are ready and have a secure understanding of numbers. It is essential that children achieve the correct answer using a method they fully comprehend, rather than following a process they do not understand. The CPA approach (concrete-pictorial-abstract) is widely recognised as supporting children in developing a deep and sustainable understanding of mathematics. This is something we actively promote at Vernon Primary to support children in learning new concepts.

At Vernon Primary School, we use the White Rose Maths small steps to learning as the spine of our mathematics curriculum. The small steps break the National Curriculum objectives into carefully sequenced, manageable stages so that pupils build secure conceptual understanding, fluency and the ability to reason and solve problems. Teachers use these steps alongside the White Rose representations and stem sentences, while adapting the pace and point of introduction of some formal calculation methods where this better meets the needs of our pupils. For example, formal column addition is introduced from Year 2 where pupils are ready, and formal division is introduced progressively so that long division can begin in Year 5 and be consolidated in Year 6.

Alongside written methods, children should secure mental strategies. When calculating, children should decide which strategy to use and be able to explain and reason why they have chosen a particular strategy, as well as whether it is the most efficient.

Through this policy, we aim to:

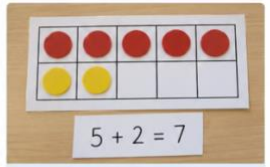
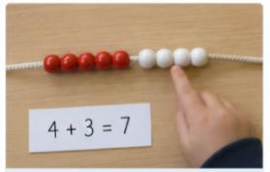
- Support greater consistency in the teaching of written calculations across the school.
- Strengthen continuity and progression in children's understanding of written calculations.
- Establish a core set of methods that every child will experience and build upon.
- Build on models and images introduced to promote conceptual understanding.

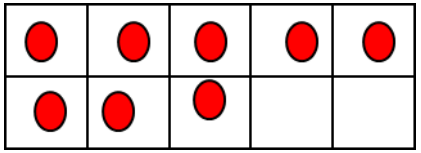
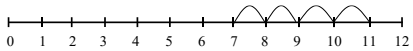
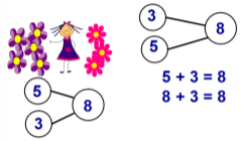
- Provide reference and guidance on the teaching of calculation skills for teaching staff, teaching assistants, and parents.
- · Use the White Rose Maths small-step progression and representations as our curriculum spine, while making purposeful adaptations to the timing of formal methods where this supports pupils' learning.

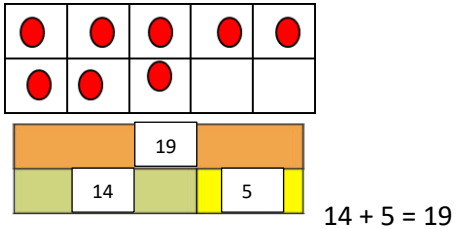
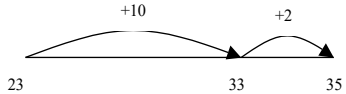
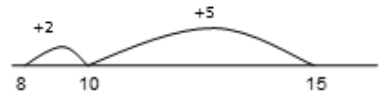
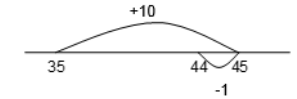
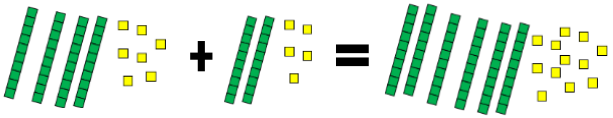
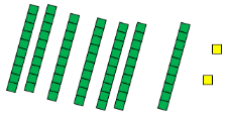
Addition

Calculation progression through the primary years

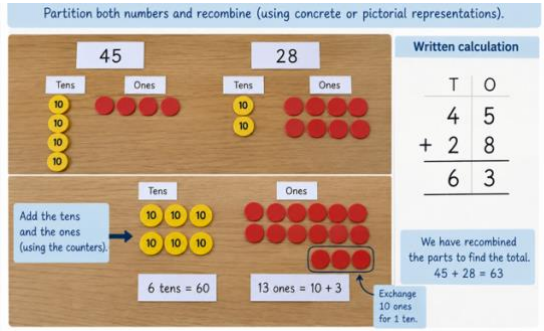
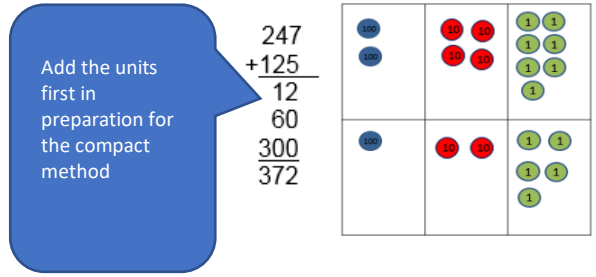
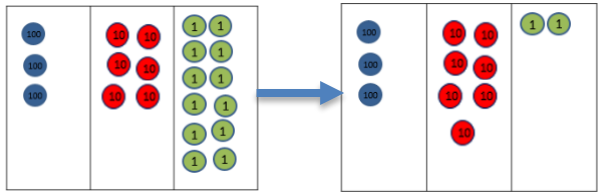
'Nobody else is quite like me'

	Branches	EYFS Reception	Method	Model/Examples
Addition EYFS	Number Bonds	Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.	◦ Children combine two groups of objects to find a total. ◦ Children initially count all of the objects to find the total, and then progress to counting on from the larger group. ◦ Adults model and encourage the use of mathematical language such as add, altogether, total, more and number sentences (e.g. 3 + 2 = 5). ◦ Pupils use practical resources and real objects before moving on to pictorial representations. ◦ Teaching should focus on developing a secure understanding of numbers within 10 and early number bonds. Opportunities to practise addition should be provided through stories, songs, play and practical problem solving in a variety of meaningful contexts.	 Combining two groups  Ten frame representation  Counting on  Number bonds with practical resources
	Mental Calculations	Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.		
	Written Methods			
	Inverse operations, estimating and checking answers			
	Problem Solving			

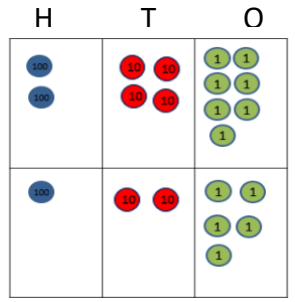
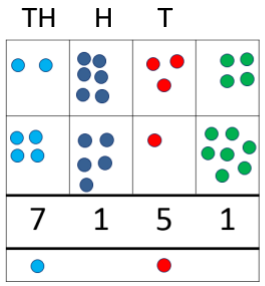
	Branches	Milestone 1 Year 1 National Curriculum	Method	Model/Examples
Addition Year 1	**Number Bonds**	represent and use number bonds and related subtraction facts within 20	**<u>+ = signs and missing numbers</u>** Children need to understand the concept of equality before using the '=' sign. Calculations should be written either side of the equality sign so that the sign is not just interpreted as 'the answer'. 2 = 1+ 1 2 + 3 = 4 + 1 Missing numbers need to be placed in all possible places. 3 + 4 = □ □ = 3 + 4 3 + □ = 7 7 = □ + 4 **<u>Counting and Combining sets of Objects</u>** Combining two sets of objects (aggregation) which will progress onto adding on to a set (augmentation)	Combining two sets of objects  Use tens frame and numicon to support children to visualise number facts  Understanding of counting on with a number track.  Understanding of counting on with a number line (supported by models and images). 7+ 4   Use the part, whole model to represent the addition.
	Mental Calculations	add and subtract one-digit and two-digit numbers to 20, including zero		
		read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Written Methods)		
	Written Methods	read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation)		
	Inverse operations, estimating and checking answers			
	Problem Solving	solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ - 9		

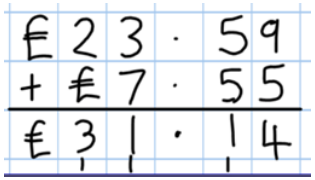
	Branches	Milestone 1 Year 2 National Curriculum	Method	Model/Examples
Addition Year 2	**Number Bonds**	recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100	Missing number problems e.g 14 + 5 = 10 + □ 32 + □ + □ = 100 35 = 1 + □ + 5 It is valuable to use a range of representations (also see Y1). Continue to use number lines to develop understanding of: <u>Counting on in tens and ones</u> 23 + 12 = 23 + 10 + 2 = 33 + 2 = 35 <u>Partitioning and bridging through 10.</u> The steps in addition often bridge through a multiple of 10 e.g. Children should be able to partition the 7 to relate adding the 2 and then the 5. 8 + 7 = 15 <u>Adding 9 or 11 by adding 10 and adjusting by 1</u> e.g. Add 9 by adding 10 and adjusting by 1 35 + 9 = 44 **<u>Formal written method</u>** <u>At Vernon Primary, formal column addition is introduced in Year 2 when pupils are secure with place value and can explain what happens when 10 ones are exchanged for 1 ten. This is a deliberate adaptation to the White Rose sequence to meet the needs of our pupils.</u> Begin with two-digit additions where	Continue to use tens frame, numicon to support children to visualise number facts. Introduce the bar model.  14 + 5 = 19      40 + 7 + 20 + 5 60 + 12 = 72
	Mental Calculations	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		
		show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot		
	Written Methods			
	Inverse operations, estimating and checking answers	recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.		
	Problem Solving	solve problems with addition and subtraction: * using concrete objects and pictorial representations, including those involving numbers, quantities and measures * applying their increasing knowledge of mental and written methods *solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change* (copied from Measurement)		

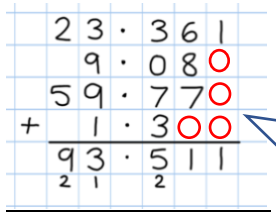
			no exchange is required, using Base 10 or place value counters alongside the written layout. Progress to calculations that require an exchange. Digits must be aligned accurately according to place value and calculations begin with the ones column. **The exchange should be modelled and explained using concrete and pictorial representations before pupils rely on the abstract written method.**	

	Branches	Milestone 2 Year 3 National curriculum	Method	Model/Examples
Addition Year 3	**Number Bonds**		Missing number problems using a range of equations as in Year 1 and 2 but with appropriate, larger numbers. **<u>Partition into hundreds, tens and ones</u>** Partition both numbers and recombine. Do this not by expanding the method but by having concrete or pictural representations alongside the calculation. e.g. 247 + 125 = 247 + 100 + 20+ 5 = 347 + 20 + 5 = 367 + 5 = 372 Children need to be secure adding multiples of 100 and 10 to any three-digit number including those that are not multiples of 10. **<u>Formal written method</u>** Consolidate formal column addition with up to three-digit numbers. Correct place-value alignment is essential and should be supported with place value counters or Base 10 where needed. Pupils should explain exchanges between ones and tens, and between tens and hundreds, so that the written method remains connected to place value. Develop accuracy and fluency with the compact column method while continuing to encourage efficient mental strategies when these are more appropriate.	Continue to use apparatus to support children to visualise number facts. Use the bar model to represent calculations and problems.     247 +125 372 1
	Mental Calculations	add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds		
	Written Methods	add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction		
	Inverse operations, estimating and checking answers	estimate the answer to a calculation and use inverse operations to check answers		
	Problem Solving	solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction		

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	Branches	Milestone 2 Year 4 National Curriculum	Method	Model/Examples
Addition Year 4	**Number Bonds**		Missing number/digit problems: **Mental methods** Should continue to develop, supported by a range of models and images, including the number line. **Written methods (progressing to 4-digits)** Expanded column addition modelled with place value counters, progressing to calculations with 4-digit numbers. **Compact written method** Extend to numbers with at least four digits. **Children should be able to make the choice of reverting to expanded methods if experiencing any difficulty.** Extend to up to two places of decimals (same number of decimals places) and adding several numbers (with different numbers of digits). 72.8 + 54.6 127.4 1 1 Use the written method with decimals in the context of money	Continue to use the bar model as in Y3.   200 + 40 + 7 100 + 20 + 5 300 + 60 +12 = 372 247 +125 12 60 300 372 247 +125 372 1  2634 +4517 7151 1 1 £ 32.50 + £ 21.75 = £54.25 £32.50 + £21.75 £54.25
	Mental Calculations			
	Written Methods	add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate		
	Inverse operations, estimating and checking answers	estimate and use inverse operations to check answers to a calculation		
	Problem Solving	solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why		

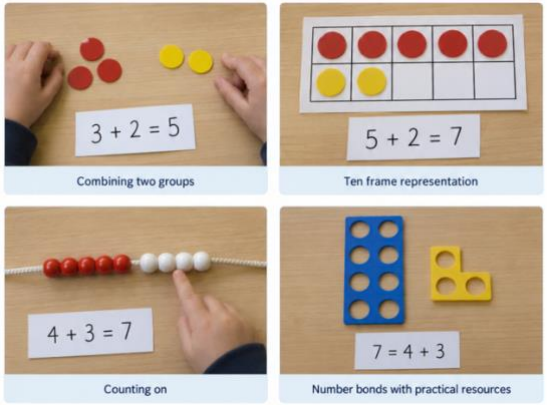
	Branches	Milestone 3 Year 5	Method	Model/Examples
Addition Year 5	**Number Bonds**		**<u>Mental methods</u>** should continue to develop, supported by a range of models and images, including the number line. Children should practise with increasingly large numbers to aid fluency **<u>Written methods (progressing to more than 4-digits)</u>** As year 4, progressing when understanding of the expanded method is secure, children will move on to the formal columnar method for whole numbers and decimal numbers as an efficient written algorithm. Place value counters can be used alongside the columnar method to develop understanding of addition with decimal numbers. The decimal point should be aligned in the same way as the other place value columns, and must be in the same column in the answer. Children using rounding to estimate answers	Continue to use the bar model as in Y4. **2364 + 1999 =** 2364 + 2000 = 4364 4364—1 = 4363 **12462 + 2300** = 12462 + 2000 =14462 14462 +300 = 14762 172.83 + 54.68 227.51 1 1 1  25.356 + 346.28 becomes: Estimate: 25 + 350 = 375 25.356 +346.28 371.636 1 1
	Mental Calculations	add and subtract numbers mentally with increasingly large numbers		
	Written Methods	add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)		
	Inverse operations, estimating and checking answers	use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy		
	Problem Solving	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why		

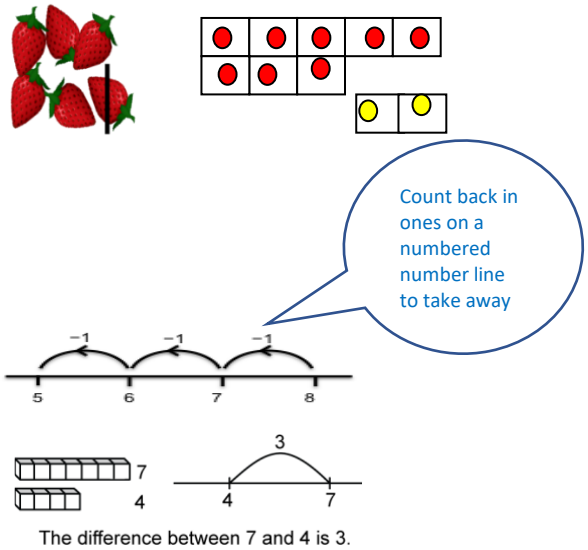
	Branches	Milestone 3 Year 6	Method	Model/Examples
Addition Year 6	**Number Bonds**		**<u>Mental methods</u>** should continue to develop, supported by a range of models and images, including the number line. **<u>Written methods</u>** As year 5, progressing to larger numbers, aiming for both conceptual understanding and procedural fluency with columnar method to be secured. Continue calculating with decimals, including those with different numbers of decimal places **<u>Problem Solving</u>** Teachers should ensure that pupils have the opportunity to apply their knowledge in a variety of contexts and problems (exploring cross curricular links) to deepen their understanding. Adding several numbers with different numbers of decimal places (including money and measures): • Tenths, hundredths and thousandths should be correctly aligned, with the decimal point lined up vertically including in the answer row. • Zeros could be added into any empty decimal places, to show there is no value to add.	57 + Δ = 125 149 + 137 + 158 = Δ (Δ + Δ) x Δ = 10 **12 462 + 8456** Estimate: 21 000 = 12 500 + 8 500 12 462 <u>+ 8 456</u> <u>20 918</u> 1 1 
	Mental Calculations	perform mental calculations, including with mixed operations and large numbers		
		use their knowledge of the order of operations to carry out calculations involving the four operations		
	Written Methods	Solve problems involving addition and subtraction		
	Inverse operations, estimating and checking answers	use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.		
	Problem Solving	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why		

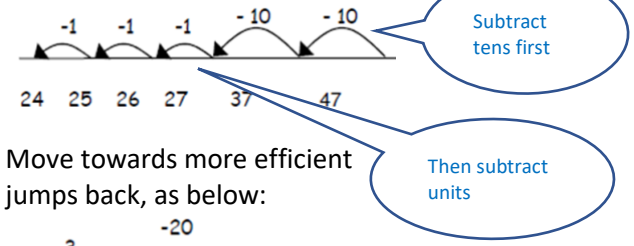
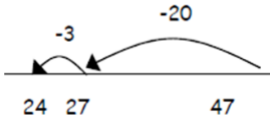
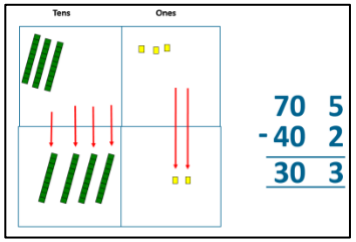
Subtraction

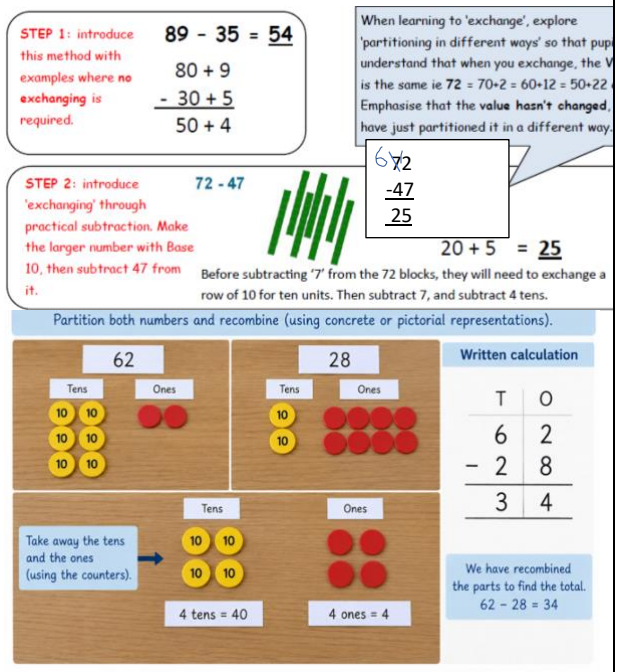
Calculation progression through the primary years

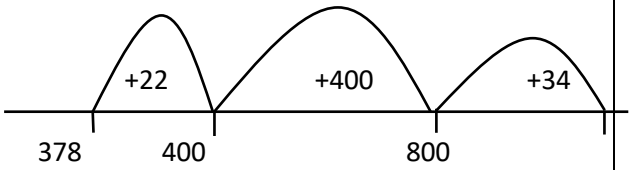
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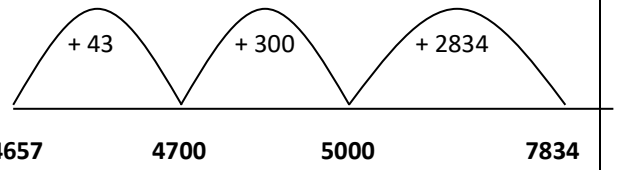
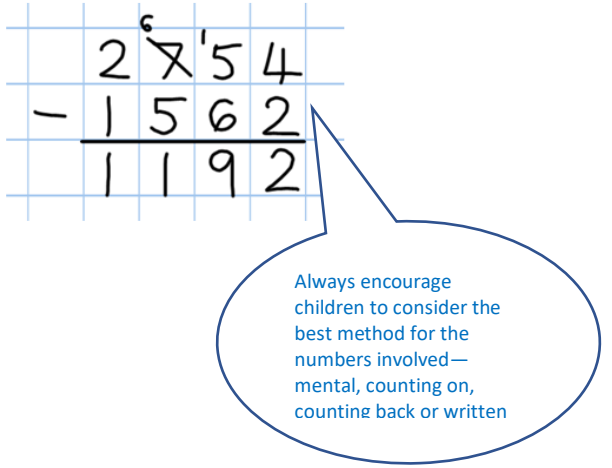
	Branches	EYFS Reception	Method	Model/Examples
Subtraction EYFS	Number Bonds	Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.	◦ Children begin to understand subtraction as taking away and as finding how many are left. ◦ Children also explore subtraction as finding the difference between two groups. ◦ Adults model and use mathematical language such as take away, fewer, less, how many left and difference. ◦ Pupils use practical resources and real objects before moving to pictorial representations. ◦ Teaching should focus on secure understanding of numbers within 10 and related subtraction facts. Opportunities should include stories, songs, play and practical problem solving to help children make sense of subtraction in meaningful contexts.	
	Mental Calculations	Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.		
	Written Methods			
	Inverse operations, estimating and checking answers			
	Problem Solving			

	Branches	Milestone 1 Year 1 National Curriculum	Method	Model/Examples
Subtraction Year 1	**Number Bonds**	represent and use number bonds and related subtraction facts within 20	**Missing number problems** As well as recalling subtraction facts up to 20, children should be able to subtract zero.	Use – = signs and missing numbers ○ = 8 – 3 8 – 3 = Δ 5 = □ – 3 8 – ○ = 5 5 = 8 – Δ □ – 3 = 5 5 = ○ – □ □ – ○ = 5
	Mental Calculations	add and subtract one-digit and two-digit numbers to 20, including zero read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Written Methods)	**Understand subtraction as take-away** The use of images is valuable for modelling subtraction e.g. Numicon, bundles of straws, apparatus, multi-link cubes, part whole, tens frames	 The difference between 7 and 4 is 3.
	Written Methods	read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation)	Use concrete objects and pictorial representations. If appropriate, progress from using number lines with every number shown, to number lines with significant numbers shown.	
	Inverse operations, estimating and checking answers		**Understand subtraction as finding the difference.** This will be introduced practically with language 'find the difference' and 'how many more' in a range of familiar contexts.	
	Problem Solving	solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ - 9		

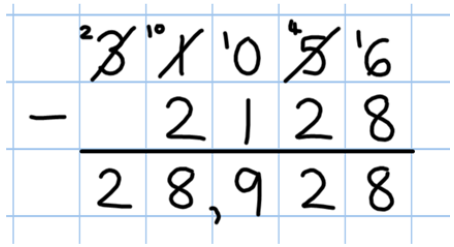
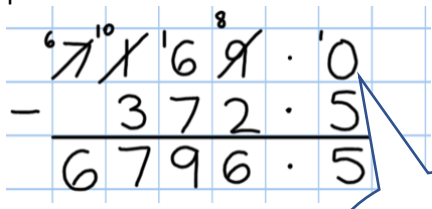
	Branches	Milestone 1 Year 2 National Curriculum	Method	Model/Examples
Subtraction Year 2	**Number Bonds**	recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100	Missing number problems It is valuable to use a range of representations (also see Y1). Continue to use number lines to model take-away and difference. The link between the two may be supported by an image like this, with 23 being taken away from 47, leaving the difference, which is 24.	52 – 8 = □; □ – 20 = 25; 22 = □ – 21; 6 + □ + 3 = 11 **47 - 23 = 24** Partition the second number and subtract it in tens and units, as below:  Move towards more efficient jumps back, as below: 
	Mental Calculations	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 show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot		
	Written Methods		**Towards written methods** Recording addition and subtraction in expanded columns can support understanding of the quantity aspect of place value and prepare for efficient written methods with larger numbers. The numbers may be represented with apparatus. E.g. 89 – 35 = 54	Introduce this method with examples where **no exchanging** is required. **89 – 35 = 54** 80 + 9 30 + 5 50 + 4 
	Inverse operations, estimating and checking answers	recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.		
	Problem Solving	solve problems with addition and subtraction: * using concrete objects and pictorial representations, including those involving numbers, quantities and measures * applying their increasing knowledge of mental and written methods *solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change* (copied from Measurement)		

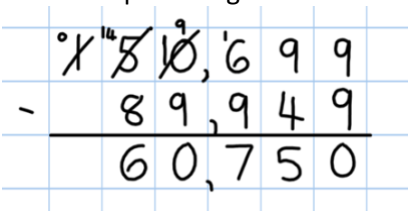
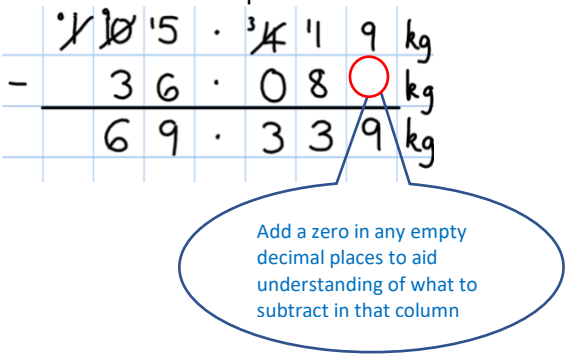
	Branches	Milestone 2 Year 3 National curriculum	Method	Model/Examples
Subtraction Year 3	Number Bonds		**Missing number problems** **Mental methods** should continue to develop, supported by a range of models and images, including the number line. The bar model should continue to be used to help with problem solving (see Y1 and Y2). Children should make choices about whether to use complementary addition or counting back, depending on the numbers involved. **Formal written method (progressing to 3 digits)** At Vernon Primary, pupils move from practical partitioning to the compact column subtraction layout without requiring them to record an expanded partitioned method. The main emphasis is on setting the calculation out correctly, with hundreds, tens and ones aligned accurately by place value. Begin with calculations where no exchange is required. Once secure, introduce exchanging using Base 10 or place value counters so pupils can see, for example, that 1 ten can be exchanged for 10 ones. Use the language of exchange/exchanging rather than exchanging. Pupils should be able to explain what has been exchanged and why before relying on the written notation.	e.g. □ = 43 – 27; 145 – □ = 138; 274 – 30 = □; 245 – □ = 195; 532 – 200 = □; 364 – 153 = □ 
	Mental Calculations	add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds		
	Written Methods	add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction		
	Inverse operations, estimating and checking answers	estimate the answer to a calculation and use inverse operations to check answers		
	Problem Solving	solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction		

			Number lines and complementary addition can still be used when they are more efficient for the numbers involved; pupils should learn to choose an appropriate method.	**834 - 378 =** The library owns 834 books. 378 are out on loan. How many are on the shelves?  721 834 -378 456

	Branches	Milestone 2 Year 4 National Curriculum	Method	Model/Examples
Subtraction Year 4	Number Bonds		**Missing number/digit problems**	456 + □ = 710; 1□7 + 6□ = 200; 60 + 99 + □ = 340; 200 – 90 – 80 = □; 225 - □ = 150; □ – 25 = 67; 3450 – 1000 = □; □ - 2000 = 900
	Mental Calculations		**Mental methods** should continue to develop, supported by a range of models and images, including the number line.	**7834 – 4657=**  **4657 4700 5000 7834**
	Written Methods	add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	**Formal written method (progressing to 4 digits)** Use compact column subtraction with correct place-value alignment, progressing to calculations with 4-digit numbers. Place value counters or Base 10 should be used to model exchanges where needed.	
	Inverse operations, estimating and checking answers	estimate and use inverse operations to check answers to a calculation	Pupils should become increasingly fluent with exchanging, including calculations requiring more than one exchange, while continuing to select mental or complementary methods when these are more efficient.	
	Problem Solving	solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why		

	Branches	Milestone 3		

		Year 5	Method	Model/Examples
Subtraction Year 5	**Number Bonds**		**Missing number/digit problems**	6.45 = 6 + 0.4 + □; 119 - □ = 86; 1 000 000 - □ = 999 000; 600 000 + □ + 1000 = 671 000; 12 462 – 2 300 = □
	Mental Calculations	add and subtract numbers mentally with increasingly large numbers	**Mental methods** should continue to develop, supported by a range of models and images, including the number line.	
	Written Methods	add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	**Formal written method (progressing to more than 4 digits)** Secure the compact column method with increasingly large whole numbers, including calculations that require one or more exchanges. Use place value representations where needed to maintain conceptual understanding.	 Subtract with decimal values, including mixtures of integers and decimals, aligning the decimal point.  Create lots of opportunities for subtracting and finding differences with money and measures. Add a zero in any empty decimal places to aid understanding of what to subtract in that column
	Inverse operations, estimating and checking answers	use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy		
	Problem Solving	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	Progress to calculating with decimals, including those with different numbers of decimal places. Decimal points and corresponding place-value columns must be aligned accurately.	

	Branches	Milestone 3 Year 6	Method	Model/Examples
Subtraction Year 6	**Number Bonds**		**Missing number/digit problems** **Mental methods** should continue to develop, supported by a range of models and images, including the number line. **Written methods** As in Year 5, progress to larger and more complex numbers, securing both conceptual understanding and procedural fluency with the formal column method and exchanging. Pupils should choose efficiently between mental, complementary and formal written methods according to the numbers and context. Continue calculating with decimals, including those with different numbers of decimal places.	□ and # each stand for a different number. # = 34. # + # = □ + □ + #. What is the value of □? What if # = 28? What if # = 21 10 000 000 = 9 000 100 + □ 7 – 2 x 3 = □; (7 – 2) x 3 = □; (□ - 2) x 3 = 15 Using the compact column method to subtract more complex integers  Using the compact column method to subtract money and measures, including decimals with different numbers of decimal places. 
	Mental Calculations	perform mental calculations, including with mixed operations and large numbers		
		use their knowledge of the order of operations to carry out calculations involving the four operations		
	Written Methods	Solve problems involving addition and subtraction		
	Inverse operations, estimating and checking answers	use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.		
	Problem Solving	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why		

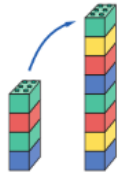
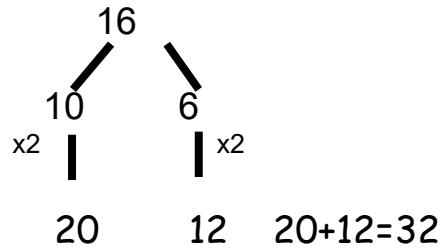
Multiplication

Calculation progression through the primary years

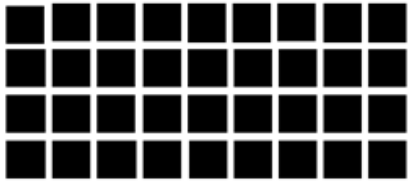
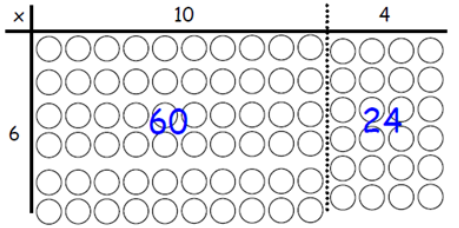
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	Branches	EYFS	Method	Models/Examples
Multiplication EYFS	Multiplication and division facts	Although no formal recording of either of these operations will take place in Reception they will begin to lay the foundations. This is particularly true for division as sharing. Children will experience many occasions when they have to share out objects between groups and this begins work on division. As early as possible, division should be referred to as 'shared equally between' to avoid confusion later on in their education. Children may begin to count in 2s when counting e.g. shoes or socks and this lays foundations for multiplication.		
	Mental Calculations			
	Written Methods			
	Properties of numbers: Multiples, Factors, Prime, Square, cube numbers			
	Order of Operations			
	Inverse operations, estimating and checking answers			
	Problem Solving			

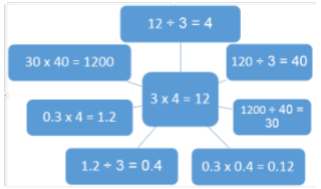
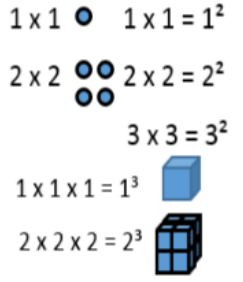
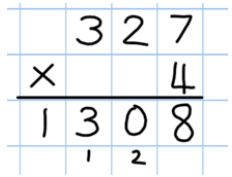
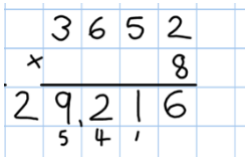
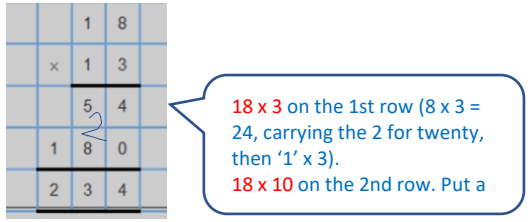
	Branches	Milestone 1 Year 1	Method	Models/Examples
Multiplication Year 1	**Multiplication and division facts**	count in multiples of twos, fives and tens (copied from Number and Place Value	Understand multiplication is related to doubling and combining groups of the same size (repeated addition) Washing line, and other practical resources for counting. Concrete objects. Numicon; bundles of straws, bead strings Problem solving with concrete objects (including money and measures Use cuissenaire and numicon to develop the vocabulary relating to 'times' or 'lots of'. Use arrays to understand multiplication can be done in any order (commutative)	How many legs will 3 teddies have? 2 + 2 + 2 = 6 There are 3 sweets in one bag. How many sweets are in 5 bags altogether? 3 + 3 + 3 + 3 + 3 = 15 Give children experience of counting in 2s, 5s and 10s 2 x 3 = 6 or 3 x 2 = 6
	Mental Calculations			
	Written Methods			
	Properties of numbers: Multiples, Factors, Prime, Square, cube numbers			
	Order of Operations			
	Inverse operations, estimating and checking answers			
	Problem Solving	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		

	Branches	Milestone 1 Year 2	Method	Models/Examples
Multiplication Year 2	**Multiplication and division facts**	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward (copied from Number and Place Value)	Expressing multiplication as a number sentence using x Using understanding of the inverse and practical resources to solve missing number problems. Develop understanding of multiplication using array and number lines (see Year 1). Include multiplications not in the 2, 5 or 10 times tables. Begin to develop understanding of multiplication as scaling (3 times bigger/taller) **<u>Towards written methods</u>** Use jottings to develop an understanding of doubling two digit numbers.	7 x 2 = □ □ = 2 x 7 7 x □ = 14 14 = □ x 7 □ x 2 = 14 14 = 2 x □ □ x ◯ = 14 14 = □ x ◯  3 x 5 = 15 **5 x 3** = 3 + 3 + 3 + 3 = **15** **3 x 5** = 5 + 5 + 5 = **15**  **4 X 5 = 20**  double 4 is 8 4 x 2 = 8 
	Mental Calculations	show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot		
	Written Methods	calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs		
	Properties of numbers: Multiples, Factors, Prime, Square, cube numbers			
	Order of Operations			
	Inverse operations, estimating and checking answers			
	Problem Solving	solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts		

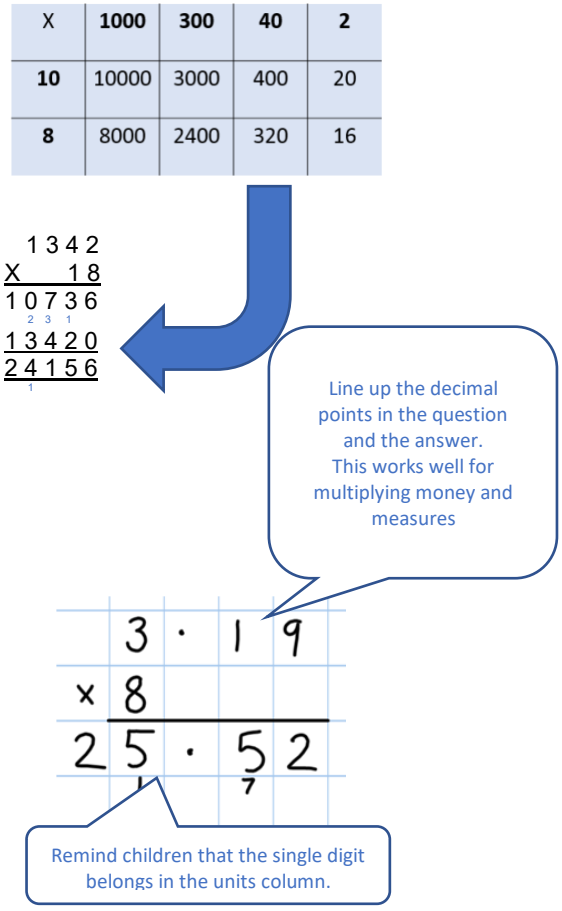
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	Branches	Milestone 2 Year 3	Method	Models/Examples
Multiplication Year 3	**Multiplication and division facts**	count from 0 in multiples of 4, 8, 50 and 100 (copied from Number and Place Value recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	Missing number problems **<u>Mental methods</u>** Doubling 2 digit numbers using partitioning Demonstrating multiplication on a number line – jumping in larger groups of amounts 13 x 4 = 10 groups 4 = 3 groups of 4 **<u>Written methods (progressing to 2d x 1d)</u>** Developing written methods using understanding of visual images Introduce the grid method with children physically making an array to represent the calculation (e.g. make 8 lots of 23 with 10s and 1s place value counters), then translate this to grid method format Give children opportunities for children to explore this and deepen understanding using apparatus and place value counters	Continue with a range of equations as in Year 2 but with appropriate numbers. Use jottings to record method 14 x 4 = 10 x 4 = 40 4 x 4 = 16 40 + 16 = 56  9 x 4 = 36 Eg. 23 x 8 = 184 X | 20 | 3 8 | 160 | 24  **160 + 24 = 184**
	Mental Calculations	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 and progressing to formal written methods (appears also in Written Methods)		
	Written Methods	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 and progressing to formal written methods (appears also in Mental Methods)		
	Properties of numbers: Multiples, Factors, Prime, Square, cube numbers			
	Order of Operations			
	Inverse operations, estimating and checking answers	*estimate the answer to a calculation and use inverse operations to check answers* (copied from Addition and Subtraction)		
	Problem Solving	solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects		

	Branches	Milestone 2 Year 4	Method	Models/Examples
Multiplication Year 4	**Multiplication and division facts**	count in multiples of 6, 7, 9, 25 and 1000 (copied from Number and Place Value)	Continue with a range of equations with appropriate numbers. Also include equations with missing digits **Mental methods** Counting in multiples of 6, 7, 9, 25 and 1000, and steps of 1/100. Solving practical problems where children need to scale up. Relate to known number facts. (e.g. how tall would a 25cm sunflower be if it grew 6 times taller?) **Written methods (progressing to 2d and 3d by a 1d)** Children to embed and deepen their understanding of the grid method. Children to move to the expanded method multiplying units first, then tens by units. Then when confident, children are to move to the short multiplication method for TU x U progressing to HTU x U	□2 x 5 = 160 18 x Δ = 72 Use commutativity and other strategies mentally 3 x 6 = 6 x 3 , 2 x 6 x 5 = 10 x 6 , 39x7 = 30 x 7 + 9 x 7. Eg. 136 x 5 = 680 X | 100 | 30 | 6 5 | 500 | 150 | 30 500 150 + 30 680 34 X 6 24 (6x4) 180 (6x30) 204 H T U 3 4 x 6 2 0 4 2 Move to short multiplication when children are confident in carrying for written addition TH H T U 3 2 5 X 7 2 2 7 5 1 3
	Mental Calculations	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 (appears also in Properties of Numbers)		
	Written Methods	multiply two-digit and three-digit numbers by a one-digit number using formal written layout		
	Properties of numbers: Multiples, Factors, Prime, Square, cube numbers	recognise and use factor pairs and commutativity in mental calculations (repeated)		
	Order of Operations			
	Inverse operations, estimating and checking answers	*estimate and use inverse operations to check answers to a calculation* (copied from Addition and Subtraction)		
	Problem Solving	solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects		

	Branches	Milestone 3 Year 5	Method	Models/Examples
Multiplication Year 5	**Multiplication and division facts**	count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 (copied from Number and Place Value)	**Mental methods** Solving practical problems where children need to scale up. Relate to known number facts. Use multiplication facts to solve problems involving squares and cubes. **Written methods** Continue with the grid method for multiplication from Year 4 progressing to short multiplication when children are ready. Children to compare these to see how the steps are related. Once children are confident with HTU x U they are to progress to more complex numbers. Progress to long multiplication when children are confident with their place value and with carrying numbers into next columns.	4 x 35 = 2 x 2 x 35   X | 300 | 20 | 7 4 | 1200 | 80 | 28  Moving towards more complex numbers  
	Mental Calculations	multiply and divide numbers mentally drawing upon known facts		
		multiply and divide whole numbers and those involving decimals by 10, 100 and 1000		
	Written Methods	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		
		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		
	Properties of numbers: Multiples, Factors, Prime, Square, cube numbers	identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.		
		know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers		
		establish whether a number up to 100 is prime and recall prime numbers up to 19		
		recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})		
	Order of Operations			
	Inverse operations, estimating and checking answers			
	Problem Solving	solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes		
		solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign		
		solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates		

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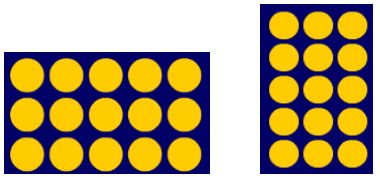
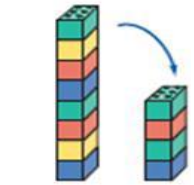
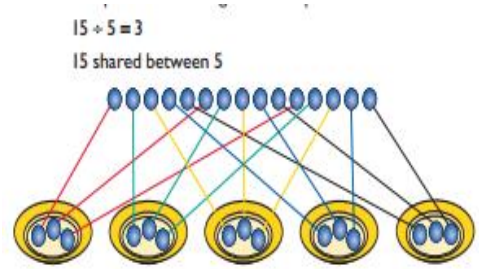
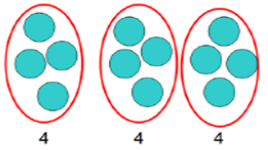
	Branches	Milestone 3 Year 6	Method	Models/Examples
Multiplication Year 6	**Multiplication and division facts**		**Mental methods** Children solve practical problems where they need to scale up and relate to known number facts. Pupils explore the order of operations using brackets; **Written methods** Continue to refine and deepen understanding of written methods including fluency for using long multiplication. Children to continue with the grid method and progress to long multiplication when they are ready. Use short multiplication to multiply a decimal number with up to 2 decimal places by a single digit number.	A bag of four oranges costs thirty seven pence. How much do twelve oranges cost? 2 + 1 x 3 = 5 and (2 + 1) x 3 = 9. 
	Mental Calculations	perform mental calculations, including with mixed operations and large numbers		
		associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8) (copied from Fractions)		
	Written Methods	multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication		
		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 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		
		use written division methods in cases where the answer has up to two decimal places (copied from Fractions (including decimals))		
	Properties of numbers: Multiples, Factors, Prime, Square, cube numbers	identify common factors, common multiples and prime numbers *use common factors to simplify fractions; use common multiples to express fractions in the same denomination* (copied from Fractions)		
		calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3 (copied from Measures)		
	Order of Operations	use their knowledge of the order of operations to carry out calculations involving the four operations		
	Inverse operations, estimating and checking answers			
	Problem Solving	solve problems involving addition, subtraction, multiplication and division		
		solve problems involving similar shapes where the scale factor is known or can be found (copied from Ratio and Proportion)		

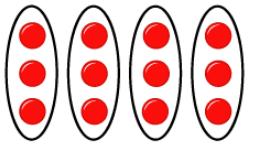
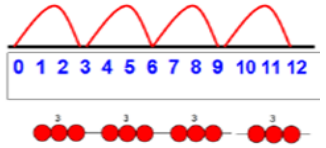
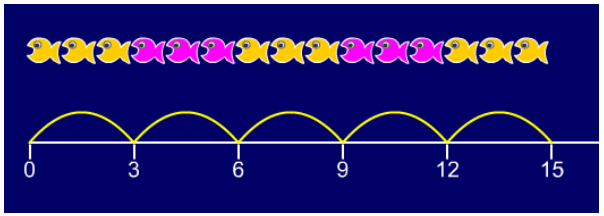
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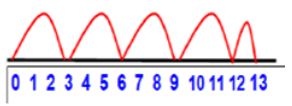
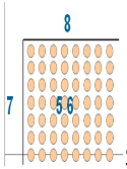
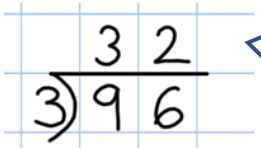
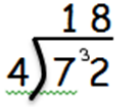
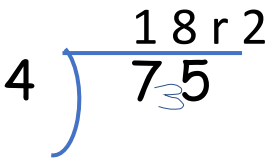
Calculation progression through the primary year

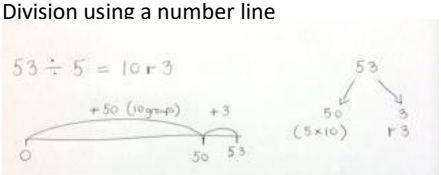
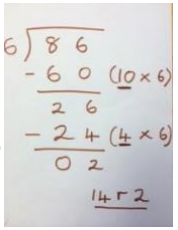
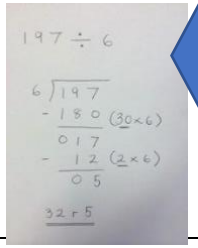
'Nobody else is quite like me'

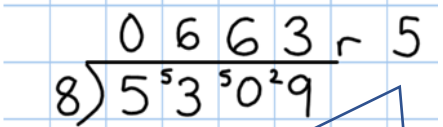
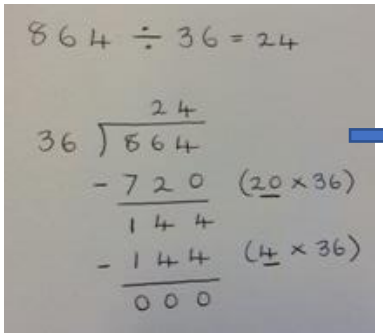
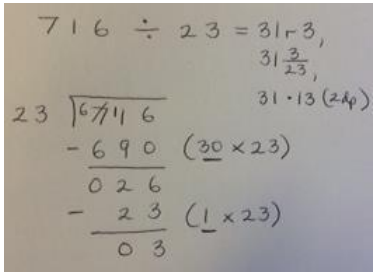
	Branches	EYFS	Method	Models/Examples
Division EYFS	Multiplication and division facts Mental Calculations Written Methods Properties of numbers: Multiples, Factors, Prime, Square, cube numbers Order of Operations Inverse operations, estimating and checking answers Problem Solving	Although no formal recording of either of these operations will take place in Reception they will begin to lay the foundations. This is particularly true for division as sharing. Children will experience many occasions when they have to share out objects between groups and this begins work on division. As early as possible, division should be referred to as 'shared equally between' to avoid confusion later on in their education. Children may begin to count in 2s when counting e.g. shoes or socks and this lays foundations for multiplication.		

	Branches	Milestone 1 Year 1	Method	Models/Examples
Division Year 1	**Multiplication and division facts**	count in multiples of twos, fives and tens (copied from Number and Place Value	Children must have secure counting skills- being able to confidently count in 2s, 5s and 10s. Children should be given opportunities to reason about what they notice in number patterns. Group AND share small quantities- understanding the difference between the two concepts. **<u>Grouping</u>** Children should apply their counting skills to develop some understanding of grouping. Use of arrays as a pictorial representation for division. 12 ÷ 3 = 4 There are 3 groups of 4. 12 ÷ 4 = 3 There are 4 groups of 3. Children should be able to find ½ and ¼ and simple fractions of objects, numbers and quantities. **<u>Sharing</u>** Develops importance of one-to-one correspondence. Children should be taught to share using concrete apparatus.	How many groups of 4 can be made with 12 stars? **= 3**   15 ÷ 3 = 5 There are 5 groups of 3. 15 ÷ 5 = 3 There are 3 groups of 5  half of 8 is 4 8 ÷ 2 = 4  15 ÷ 5 = 3 15 shared between 5  4 4 4 12 shared between 3 is 4
	Mental Calculations			
	Written Methods			
	Properties of numbers: Multiples, Factors, Prime, Square, cube numbers			
	Order of Operations			
	Inverse operations, estimating and checking answers			
	Problem Solving	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		

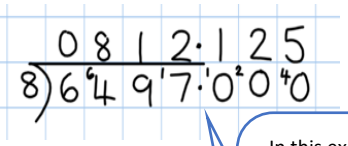
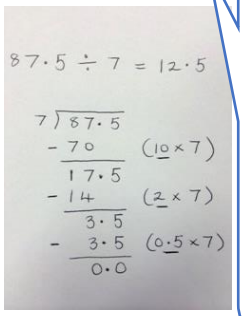
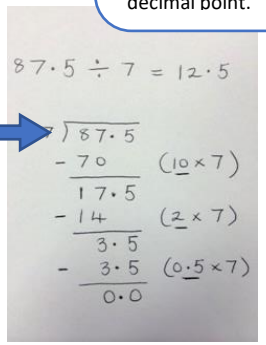
	Branches	Milestone 1 Year 2	Method	Models/Examples
Division Year 2	**Multiplication and division facts**	recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	**<u>÷ = signs and missing numbers</u>** Know and understand sharing and grouping- introducing children to the ÷ sign. Children should continue to use grouping and sharing for division using practical apparatus, arrays and pictorial representations. **<u>Grouping using a numberline</u>** Group from zero in jumps of the divisor to find our 'how many groups of 3 are there in 15?'. 15 ÷ 3 = 5 Continue work on arrays. Support children to understand how multiplication and division are inverse. Look at an array – what do you see?	6 ÷ 2 = □ □ = 6 ÷ 2 6 ÷ □ = 3 3 = 6 ÷ □ □ ÷ 2 = 3 3 = □ ÷ 2 □ ÷ ∇ = 3 3 = □ ÷ ∇  12 ÷ 3 = 4 This represents **12 ÷ 3, posed as** how many groups of 3 are in 12? Pupils should also show that the same array can represent **12 ÷ 4 = 2** if grouped horizontally.  **12 ÷ 3 = 4** Group from zero in jumps of the divisor to find our 'how many groups of 3 are there in 15?'. 15 ÷ 3 = 5 
	Mental Calculations	show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot		
	Written Methods	calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs		
	Properties of numbers: Multiples, Factors, Prime, Square, cube numbers			
	Order of Operations			
	Inverse operations, estimating and checking answers			
	Problem Solving	solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts		

	Branches	Milestone 2 Year 3	Method	Models/Examples
Division Year 3	**Multiplication and division facts**	count from 0 in multiples of 4, 8, 50 and 100 (copied from Number and Place Value recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	**÷ = signs and missing numbers** Continue using a range of equations as in year 2 but with appropriate numbers. **Grouping** How many 6's are in 30? **Becoming more efficient using a numberline** Children need to be able to partition the dividend in different ways. **Short Division** Once children are secure with division as grouping and demonstrate this using number lines, arrays etc., short division for larger 2-digit numbers should be introduced, initially with carefully selected examples requiring no calculating of remainders at all. Start by introducing the layout of short division by comparing it to an array. **Remainders** **49 ÷ 4 = 12 r1** Sharing – 49 shared between 4. How many left over? Grouping – How many 4s make 49. How many are left over? Place value counters can be used to support children apply their knowledge of grouping.	Step 1 **13 ÷ 3 =** 4r1 +3 +3 +3 +3 r1  Step 2 Short division: Limit numbers to **NO** remainders in the answer **OR** carried (each digit must be a multiple of the divisor).  56 ÷ 7 = 8 56 ÷ 8 = 7 Start by introducing the layout of short division by comparing it to an array.  Remind children of correct place value, that 96 is equal to 90 and 6, so: - How many 3's in 90? = Step 3 Short division: including working with remainders  
	Mental Calculations	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 and progressing to formal written methods (appears also in Written Methods)		
	Written Methods	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 and progressing to formal written methods (appears also in Mental Methods)		
	Properties of numbers: Multiples, Factors, Prime, Square, cube numbers			
	Order of Operations			
	Inverse operations, estimating and checking answers	*estimate the answer to a calculation and use inverse operations to check answers* (copied from Addition and Subtraction)		
	Problem Solving	solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects		

	Branches	Milestone 2 Year 4	Method	Models/Examples
Division Year 4	**Multiplication and division facts**	count in multiples of 6, 7, 9, 25 and 1000 (copied from Number and Place Value) recall multiplication and division facts for multiplication tables up to 12 × 12	**<u>÷ = signs and missing numbers</u>** Continue using a range of equations as in year 3 but with appropriate numbers. **<u>Sharing, Grouping and using a number line</u>** Children will continue to explore division as sharing and grouping, and to represent calculations on a number line until they have a secure understanding. **<u>Formal Written Method for Division</u>** Children should progress in their use of written division calculations (chunking) Calculations should include those with remainders as well as without. As children become more confident they can progress to the written method for dividing a 3 digit number by a 1 digit number, HTU ÷U.	**Using x = signs and missing numbers** □ = 60 ÷ 5 36 ÷ 9 = 4 □ = 360 ÷ 90 12 = □ ÷5 □ ÷ 4 = 9 4 = □ ÷ 90 **Balanced equations** 54 ÷ 9 = 3 × □ 36 ÷ □ = 63 ÷ Δ **<u>Step 1</u>** Division using a number line  **<u>Step 2</u>** Dividend just over 10x the divisor, e.g. 86 ÷ 6 86 60 26 (10 groups of 6) (4 groups of 6 remainder 2)  **<u>Step 3</u>** Move to 3 digit number, HTU ÷U 
	Mental Calculations	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 (appears also in Properties of Numbers)		
	Written Methods	multiply two-digit and three-digit numbers by a one-digit number using formal written layout		
	Properties of numbers: Multiples, Factors, Prime, Square, cube numbers	recognise and use factor pairs and commutativity in mental calculations (repeated)		
	Order of Operations			
	Inverse operations, estimating and checking answers	*estimate and use inverse operations to check answers to a calculation* (copied from Addition and Subtraction)		
	Problem Solving	solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects		

	Branches	Milestone 3 Year 5	Method	Models/Examples
Division Year 5	**Multiplication and division facts**	count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 (copied from Number and Place Value)	**<u>÷ = signs and missing numbers</u>** Continue using a range of equations but with appropriate numbers **<u>Formal written methods for division</u>** Consolidate short division from earlier year groups, including division of numbers up to 4 digits by a 1-digit divisor, with and without remainders. **<u>Short division and interpreting remainders</u>** Division should frequently be taught through meaningful problems so that pupils consider what a remainder represents and how it should be expressed. **Remainders may be expressed as whole-number remainders, fractions or decimals, or rounded according to the context.** **<u>Division by a 2-digit divisor and introduction to long division</u>** At Vernon Primary, pupils begin division by 2-digit divisors and are introduced to the structure of long division in Year 5 once secure with grouping, place value, multiplication facts and short division. Chunking, partitioning and factor strategies should be used to make the structure of the formal method meaningful. **<u>This earlier introduction is a deliberate school adaptation so that pupils have extended time to practise and consolidate long division before the end of Year 6.</u>**	**Using x = signs and missing numbers** 630 ÷ □ = 9 □ ÷ 9 = 0.7 □ ÷ Δ = 63 Δ ÷ 90 = 70 **Balanced equations** 100 ÷ ○ = Δ ÷ 2 **Divide up to 4 digits by a single digit, including those with remainders.** Short division, including remainder answers:  The answer to 5309 ÷ 8 could be expressed as 663 and five eighths, 663 r 5, as a decimal, or rounded as  
	Mental Calculations	multiply and divide numbers mentally drawing upon known facts		
		multiply and divide whole numbers and those involving decimals by 10, 100 and 1000		
	Written Methods	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		
		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		
	Properties of numbers: Multiples, Factors, Prime, Square, cube numbers	identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.		
		know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers		
		establish whether a number up to 100 is prime and recall prime numbers up to 19		
		recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})		
	Order of Operations			
	Inverse operations, estimating and checking answers			
	Problem Solving	solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes		
		solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign		
		solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates		

			Pupils should continue to interpret remainders appropriately and explain the relationship between the dividend, divisor, quotient and remainder.	

	Branches	Milestone 3 Year 6	Method	Models/Examples
Division Year 6	**Multiplication and division facts**		**÷ = signs and missing numbers** Continue using a range of equations but with appropriate numbers **Consolidation of short division** Pupils should use short division confidently with numbers to at least 4 digits and interpret remainders as fractions, decimals, whole-number remainders or rounded values according to context. **Consolidation and application of long division** Build on the Year 5 introduction to divide numbers up to 4 digits by a 2-digit divisor. Pupils should connect long division to place value, multiplication facts, grouping and prior chunking strategies. **Long division** Year 6 focuses on securing accuracy, efficiency and reasoning with long division, including calculations with remainders and problem-solving contexts, rather than encountering the method for the first time. **Remainders** All of the above stages should include calculations with remainders as well as	**Using x = signs and missing numbers** 630 ÷ 0.7 = □ 2.75 ÷ 5 = □ **Balanced equations** □ ÷ 0.4 = Δ ÷ 0.25   In this example rather than expressing the remainder as r1, a decimal point is added after the units because there is still a remainder and the 1 remainder is carried onto zeros after the decimal point. 
	Mental Calculations	perform mental calculations, including with mixed operations and large numbers		
		associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8) (copied from Fractions)		
	Written Methods	multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication		
		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 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		
		use written division methods in cases where the answer has up to two decimal places (copied from Fractions (including decimals))		
	Properties of numbers: Multiples, Factors, Prime, Square, cube numbers	identify common factors, common multiples and prime numbers *use common factors to simplify fractions; use common multiples to express fractions in the same denomination* (copied from Fractions)		
		calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3 (copied from Measures)		
	Order of Operations	use their knowledge of the order of operations to carry out calculations involving the four operations		
	Inverse operations, estimating and checking answers			
		solve problems involving addition, subtraction, multiplication and division		

	Problem Solving	*solve problems involving similar shapes where the scale factor is known or can be found (*copied from Ratio and Proportion)	without. Remainders should be interpreted according to the context of the problem.	**Long division** 432 ÷ 15 becomes 28 R 12 15 | 432 300 (15×20) 132 120 (15×8) 12 $\frac{12}{15} = \frac{4}{5}$ Answer: $28\frac{4}{5}$ 432 ÷ 15 becomes 28·8 15 | 432·0 300 132 120 120 0 Answer: 28·8

Monitoring and Review:

We are aware of the need to regularly review our policies to take into account the new initiatives, changes in curriculum or developments in technology.

Claire Kitchen
Subject Leader for Mathematics

Policy date – November 2026
Review Date – November 2028
Ratified by Governors – November 2026