Hunnyhill Primary School – Calculation Policy

Updated: November 2021

Early Years Foundation Stage – end of year expectations (Early Learning Goals)		
	Mental Calculation	Written Calculation
Addition	- Have a deep understanding of number to 10, including the composition of each number - Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 and some number bonds to 10	See 'progression in written addition' stage 1
Subtraction	- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10	See 'progression in written subtraction' stage 1
Multiplication	- 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	See 'progression in written multiplication' stage 1
Division	- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally	See 'progression in written division' stage 1.

Year 1 – end of year expectations			Mental
Addition	Number bonds (to and within 10 and then 20) Count on in 1s from a given 2-digit number Add two 1-digit numbers Add three 1-digit numbers, spotting doubles or pairs to 10 Count on in 10s from any given 2-digit number Add 10 to any given 2-digit number Use number facts to add 1-digit numbers to 2-digit numbers e.g. Use 4 + 3 to work out 24 + 3, 34 + 3 Add by putting the larger number first	See 'progression in written addition' stages 1-3.	
Subtraction	Number bonds (to and within 10 and then 20) Count back in 1s from a given 2 -digit number Subtract one 1 -digit number from another Count back in 10s from any given 2 -digit number Subtract 10 from any given 2 -digit number Use number facts to subtract 1 -digit numbers from 2 - digit numbers e.g. use 7 – 2 to work out 27 – 2, 37 – 2	See 'progression in written subtraction' stages 1-3.	
Multiplication	Begin to count in 2s, 5s and 10s. This should be taught through repeated addition. Begin to say what three 5s are by counting in 5s, or what four 2s are by counting in 2s, etc. Double numbers to 10	See 'progression in written multiplication' stages 1-2.	
Division	Begin to count in 2s, 5s and 10s. Find half of even numbers to 12 and know it is hard to halve odd numbers Find half of even numbers by sharing Begin to use visual and concrete arrays or 'sets of' to find how many sets of a small number make a larger number	See 'progression in written division' stage 1.	
Division	Begin to count in 2s, 5s and 10s. Find half of even numbers to 12 and know it is hard to halve odd numbers Find half of even numbers by sharing Begin to use visual and concrete arrays or 'sets of' to find how many sets of a small number make a larger number	See 'progression in written division' stage 1.	

Hunnyhill Primary School – Calculation Policy
Updated: November 2021

Year 2 – end of year expectations		
	Mental Calculation	Written Calculation
Addition	Number bonds – recap number bonds to and within 20 and then apply these facts to number bonds to 100. Count on in 1s and 10s from any given 2 -digit number Add two or three 1 -digit numbers Add a 1 -digit number to any 2 -digit number using number facts, including bridging multiples of 10 e.g. 45 + 4 e.g. 38 + 7 Add 10 and small multiples of 10 to any given 2-digit number Add any pair of 2-digit numbers	See 'progression in written addition' stages 2-3.
Subtraction	Number bonds – know all the pairs of numbers which make all the numbers to 100 (using number bonds to 10 as a basis) Count back in 1s and 10s from any given 2 -digit number Subtract a 1 -digit number from any 2 -digit number using number facts, including bridging multiples of 10 e.g. 56 – 3 e.g. 53 – 5 Subtract 10 and small multiples of 10 from any given 2-digit number Subtract any pair of 2 -digit numbers by counting back in 10s and 1s or by counting up	See 'progression in written subtraction' stages 2-3.
Multiplication	Count in 2s, 5s and 10s fluently Begin to count in 3s Begin to understand that multiplication is repeated addition and to use arrays e.g. 3 × 4 is three rows of 4 dots Begin to learn the ×2, ×3, ×5 and ×10 tables once conceptual understanding of repeated addition is secured, seeing these as 'lots of' or 'groups of' e.g. 5 lots of 2, 6 lots of 2, 7 lots of 2 Double numbers up to 20 Begin to double multiples of 5 to 100 Begin to double 2-digit numbers less than 50 with 1s digits of 1, 2, 3, 4 or 5	See 'progression in written multiplication' stages 1-3.
Division	Count in 2s, 5s and 10s. Teach division facts alongside multiplication facts, using repeated subtraction as a basis for conceptual understanding. Begin to count in 3s Using fingers, say where a given number is in the 2s, 5s or 10s count e.g. 8 is the fourth number when I count in 2s Halve numbers to 20 Begin to halve numbers to 40 and multiples of 10 to 100 Find 1 /2, 1 /3, 1 /4 and 3 /4 of a quantity of objects and of amounts (whole number answers)	See 'progression in written division' stages 1 and 2.

Year 3 – end of year expectations		
	Mental Calculation	Written Calculation
Addition	Apply number bonds to 10 and 100 learned in KS1 to number bonds to 1000. Add ones, tens or hundreds to 3 digit numbers mentally. Use place value and number facts to add a 1-digit or 2-digit number to a 3-digit number e.g. 104 + 56 is 160 since 104 + 50 = 154 and 6 + 4 = 10 676 + 8 is 684 since 8 = 4 + 4 and 76 + 4 + 4 = 84 Add pairs of 3-digit numbers mentally that do not bridge through 10 e.g. 320 + 450 Add 2 and 3 digit numbers to 3 digit numbers using partitioning as a strategy. Add fractions that have the same denominator.	See 'progression in written addition' stages 3-5.
Subtraction	Apply number bonds to 10 and 100 to 1000. Subtract tens and hundreds from 3 digit numbers mentally Subtract 2 and 3 digit numbers from 3 digit numbers using partitioning as a strategy. Find change from pounds or pence using taught strategies. Subtract fractions with the same denominator	See 'progression in written subtraction' stages 3-5.

Multiplication	Know by heart all the multiplication facts in the ×2, ×3, ×4, ×5, ×8 and ×10 tables by the end of the year Multiply whole numbers by 10 and 100 Recognise that multiplication is commutative Use place value and number facts in mental multiplication e.g. 30 × 5 is 15 × 10 Partition teen numbers to multiply by a 1-digit number e.g. 3 × 14 as 3 × 10 and 3 × 4	See 'progression in written multiplication' stages 3-4.
Division	Know by heart all the division facts derived from the ×2, ×3, ×4, ×5, ×8 and ×10 tables by the end of the year Divide whole numbers by 10 or 100 to give whole number answers Recognise that division is not commutative Use place value and number facts in mental division e.g. 84 ÷ 4 is half of 42	See 'progression in written division' stages 3-5.

Year 4 – end of year expectations		
	Mental Calculation	Written Calculation
Addition	Apply number bonds to 10 and 100 to number bonds to 10000. Add mentally 1000s, 100s and 10s to any number up to 10000. Add multiples and near multiples of 10, 100 and 1000 Add £1, 10p, 1p to amounts of money Add tenths and hundredths to any number with 2 decimal places.	See 'progression in written addition' stages 3-5.
Subtraction	Apply number bonds to 10 and 100 to number bonds to 10000. Subtract mentally 1000s, 100s and 10s from any number up to 10000. Subtract multiples and near multiples of 10, 100, 1000, £1 and 10p Subtract tenths or hundredths from any number with 2 decimal places. Subtract by counting up e.g. 503 – 368 is done by adding 368 + 2 + 30 + 100 + 3 (so we added 135) Subtract, when appropriate, by counting back or taking away, using place value and number facts Find change from £10, £20 and £50 using strategies taught so far	See 'progression in written subtraction' stages 3-5.
Multiplication	Know by heart all the multiplication facts up to 12 × 12 Recognise factors up to 12 of 2-digit numbers Multiply whole numbers and 1-place decimals by 10, 100, 1000 Multiply multiples of 10, 100 and 1000 by 1-digit numbers e.g. 300 × 6, e.g. 4000 × 8 Use understanding of place value and number facts in mental multiplication e.g. 36 × 5 is half of 36 × 10 e.g. 50 × 60 = 3000 Partition 2-digit numbers to multiply by a 1-digit number mentally e.g. 4 × 24 as 4 × 20 and 4 × 4	See 'progression in written multiplication' stages 3-5.
Division	Know by heart all the division facts up to 144 ÷ 12 Divide whole numbers by 10, 100, to give whole number answers or answers with 1 decimal place Divide multiples of 100 by 1-digit numbers using division facts e.g. 3200 ÷ 8 = 400 Use place value and number facts in mental division e.g. 245 ÷ 20 is half of 245 ÷ 10	See 'progression in written division' stages 3-5.

Year 5 – end of year expectations		
	Mental Calculation	Written Calculation
Addition	Apply known number bonds to numbers up to 1000000. Add decimal numbers with up to 3 decimal places e.g. 13·6 + 6·4 = 20 Add multiples of 10, 100, 1000, 10 000 and 100 000 e.g. 8000 + 7000 e.g. 600 000 + 700 000 Add near multiples of 10, 100, 1000, 10 000 and 100 000 to other numbers e.g. 82 472 + 30 004 Add decimal numbers which are near multiples of 1 or 10, including money e.g. 6·34 + 1·99 e.g. £34·59 + £19·95 Use place value and number facts to add two or more 'friendly' numbers, including money and decimals e.g. 3 + 8 + 6 + 4 + 7 e.g. 0·6 + 0·7 + 0·4 e.g. 2056 + 44	See 'progression in written addition' stages 3-6.

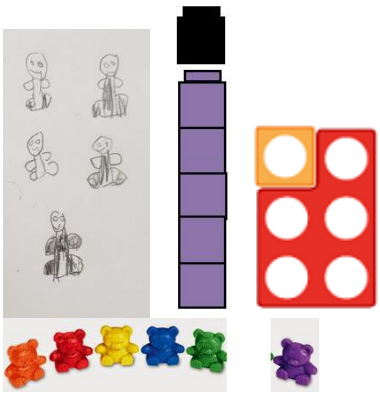
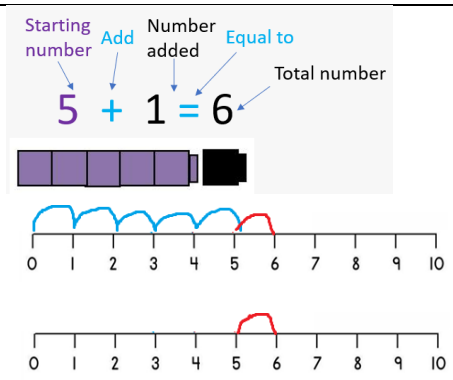
Subtraction	Subtract numbers with 2 significant digits only, using mental strategies e.g. 6·2 – 4·5 e.g. 72 000 – 47 000 Subtract 1- or 2-digit multiples of 10, 100, 1000, 10 000 and 100 000 e.g. 8000 – 3000 e.g. 60 000 – 200 000 Subtract 1- or 2-digit near multiples of 10, 100, 1000, 10 000 and 100 000 from other numbers e.g. 82 472 – 30 004 Subtract decimal numbers which are near multiples of 1 or 10, including money e.g. 6·34 – 1·99 e.g. £34·59 – £19·95 Use counting up for subtraction, with knowledge of number bonds to 10, 100 or £1, as a strategy to perform mental subtraction e.g. £10 – £3·45 Recognise fraction complements to 1 and to the next whole number e.g. 1 2/5 + 3/5 = 2	See 'progression in written subtraction' stages 3-6.
Multiplication	Recap all the multiplication facts up to 12 × 12 Multiply whole numbers and 1- and 2-place decimals by 10, 100, 1000, 10 000 Use knowledge of factors and multiples in multiplication e.g. 43 × 6 is double 43 × 3 e.g. 28 × 50 is 1/2 of 28 × 100 = 1400 Use knowledge of place value and rounding in mental multiplication e.g. 67 × 199 as 67 × 200 – 67 Use doubling and halving as a strategy in mental multiplication e.g. 58 × 5 is half of 58 × 10 e.g. 34 × 4 is 34 doubled twice Partition 2-digit numbers, including decimals, to multiply by a 1-digit number mentally e.g. 6 × 27 as 6 × 20 (120) plus 6 × 7 (42) e.g. 6·3 × 7 as 6 × 7 (42) plus 0·3 × 7 (2·1) Double amounts of money by partitioning e.g. £37·45 doubled is £37 doubled (£74) plus 45p doubled (90p) giving a total of £74·90	See 'progression in written multiplication' stages 3-7.
Division	Recap all the division facts up to 144 ÷ 12 Divide whole numbers by 10, 100, 1000, 10 000 to give whole number answers or answers with 1, 2 or 3 decimal places Use doubling and halving as mental division strategies e.g. 34 ÷ 5 is (34 ÷ 10) × 2 Use knowledge of multiples and factors, as well as tests for divisibility, in mental division e.g. 246 ÷ 6 is 123 ÷ 3 e.g. We know that 525 divides by 25 and by 3 Halve amounts of money by partitioning e.g. 1 /2 of £75·40 = 1 /2 of £75 (£37·50) plus half of 40p (20p) which is £37·70 Divide larger numbers mentally by subtracting the 10th or 100th multiple as appropriate e.g. 96 ÷ 6 is 10 + 6, as 10 × 6 = 60 and 6 × 6 = 36 e.g. 312 ÷ 3 is 100 + 4 as 100 × 3 = 300 and 4 × 3 = 12	See 'progression in written division' stages 3-6.

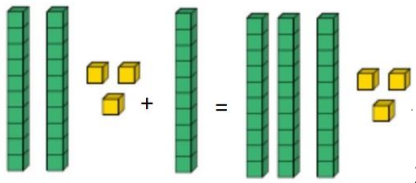
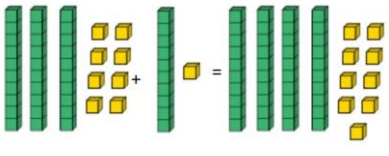
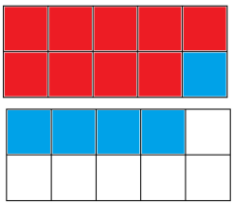
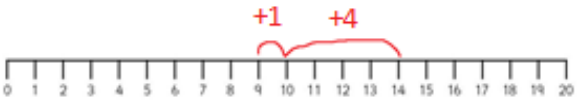
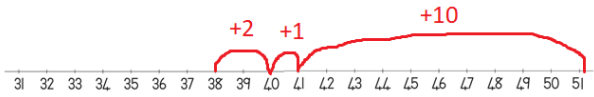
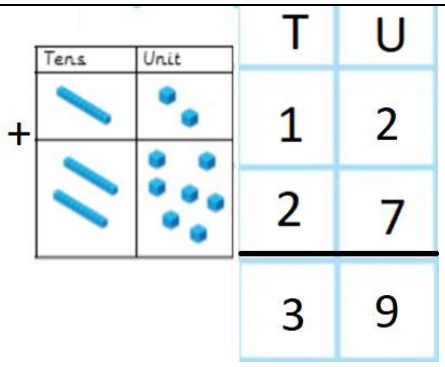
Year 6 – end of year expectations		
	Mental Calculation	Written Calculation
Addition	Know by heart number bonds and use these to derive related facts e.g. 3·46 + 0·54 Derive, quickly and without difficulty, number bonds to 1000 and apply these to numbers up to 10000000 Add small and large whole numbers where the use of place value or number facts makes the calculation doable mentally e.g. 34 000 + 8000 Add multiples of powers of 10 and near multiples of the same e.g. 6345 + 199 Add negative numbers in a context such as temperature where the numbers make sense Add two 1-place decimal numbers or two 2-place decimal numbers less than 1 e.g. 4·5 + 6·3 e.g. 0·74 + 0·33 Add positive numbers to negative numbers e.g. Calculate a rise in temperature or continue a sequence beginning with a negative number	See 'progression in written addition' stages 3-6.
Subtraction	Use number bonds to 100 to perform mental subtraction of any pair of integers by complementary addition e.g. 1000 – 654 as 46 + 300 in our heads Use number bonds to 1 and 10 to perform mental subtraction of any pair of 1-place or 2-place decimal numbers using complementary addition and including money e.g. 10 – 3·65 as 0·35 + 6 e.g. £50 – £34·29 as 71p + £15 Use number facts and place value to perform mental subtraction of large numbers or decimal numbers with up to 2 places e.g. 467 900 – 3005 e.g. 4·63 – 1·02 Subtract multiples of powers of 10 and near multiples of the same Subtract negative numbers in a context such as temperature where the numbers make sense	See 'progression in written subtraction' stages 3-6.

Hunnyhill Primary School – Calculation Policy
Updated: November 2021

Multiplication	Recap all the multiplication facts up to 12 × 12 Multiply whole numbers and decimals with up to 3 places by 10, 100 or 1000 e.g. 234 × 1000 = 234 000 e.g. 0·23 × 1000 = 230 Identify common factors, common multiples and prime numbers and use factors in mental multiplication e.g., 326 × 6 is 652 × 3 which is 1956 Use place value and number facts in mental multiplication e.g., 4000 × 6 = 24 000 e.g. 0·03 × 6 = 0·18 Use doubling and halving as mental multiplication strategies, including to multiply by 2, 4, 8, 5, 20, 50 and 25 e.g., 28 × 25 is a quarter of 28 × 100 = 700 Use rounding in mental multiplication e.g., 34 × 19 as (34 × 20) – 34 Multiply 1- and 2-place decimals by numbers up to and including 10 using place value and partitioning e.g., 3·6 × 4 is 12 + 2·4 e.g. 2·53 × 3 is 6 + 1·5 + 0·09 Double decimal numbers with up to 2 places using partitioning e.g., 36·73 doubled is double 36 (72) plus double 0·73 (1·46)	See 'progression in written multiplication' stages 3-7.
Division	Recap all the division facts up to 144 ÷ 12 Divide whole numbers by powers of 10 to give whole number answers or answers with up to 3 decimal places Identify common factors, common multiples and primes numbers and use factors in mental division e.g., 438 ÷ 6 is 219 ÷ 3 which is 73 Use doubling and halving as mental division strategies, for example to divide by 2, 4, 8, 5, 20 and 25 e.g., 628 ÷ 8 is halved three times: 314, 157, 78·5 Divide 1- and 2-place decimals by numbers up to and including 10 using place value e.g., 2·4 ÷ 6 = 0·4 e.g. 0·65 ÷ 5 = 0·13 e.g. £6·33 ÷ 3 = £2·11 Halve decimal numbers with up to 2 places using partitioning e.g., Half of 36·86 is half of 36 (18) plus half of 0·86 (0·43) Know and use equivalence between simple fractions, decimals and percentages, including in different contexts Recognise a given ratio and reduce a given ratio to its lowest terms	See 'progression in written division' stages 3-7.

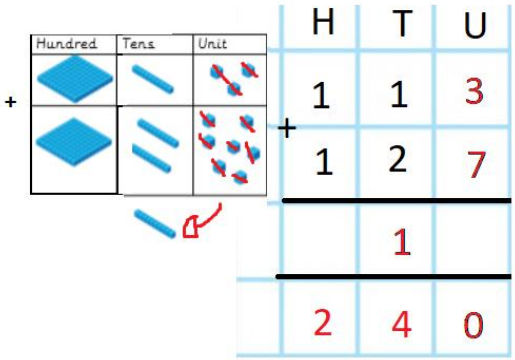
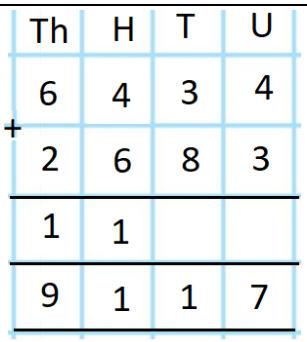
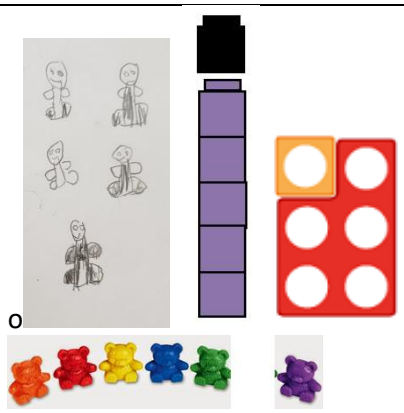
Progression in Written Calculations Stages

Progression in Written Addition	Stage 1	Children are taught that addition is the combining of two or more amounts. This is introduced by using concrete resources that they can physically count and manipulate. They begin by counting all the objects in the groups, showing their one-to-one correspondence, and then progress onto counting on from the largest number to reach the total. Jottings may be used here, alongside concrete resources, to represent the number of objects in both groups and in total.	
	Stage 2	Children are taught the symbols for addition (+) and equals (=) to help them begin to write addition number sentences. These will be linked to the use of concrete resources, such as Dienes or Numicon, or pictorial representations, such as number lines or jottings, to represent the numerals and symbols in the number sentences. Children will add singular units at a time.	

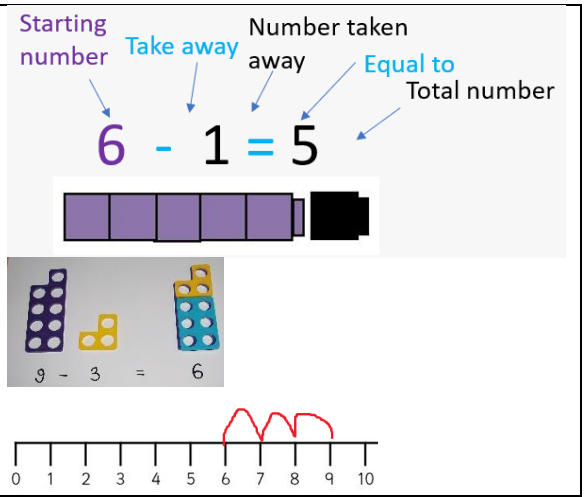
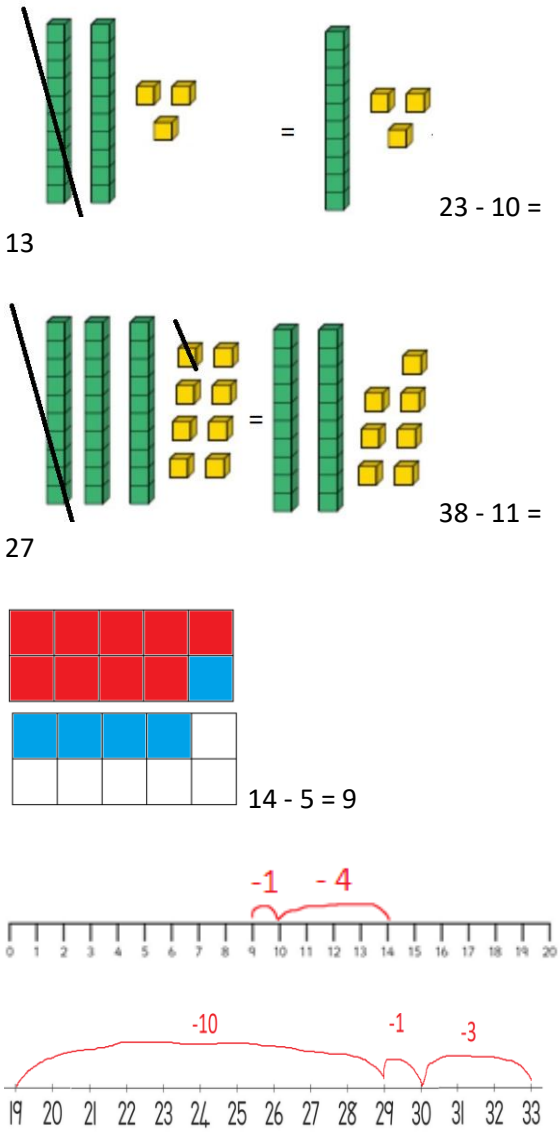
	Stage 3	Children are taught to use their understanding partitioning to help them add in more efficient ways. For example, children will understand that we can add a ten by adding 1 ten to the tens digit, rather than adding 10 singular units/ones. For example: 23 + 10 = 33, we only added one ten rather than 23 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 = 33. Using concrete resources, such as Dienes, will support this. This will progress onto children being taught to apply partitioning to larger numbers, that do not bridge ten, such 38 + 11. Here, children will be taught to partition the tens and units/ones and to add these separately – e.g., 38 + 1 = 39. 39 + 10 = 49. Children are then taught to 'bridge ten' as a more efficient strategy for addition when the tens boundary is crossed, for example, with 9 + 5, instead of 9 + 1 + 1 + 1 + 1 + 1, the child will be taught to partition the 5 into the 1 and 4 and add these parts separately to reach the total. 9 + 1 + 4. Tens frames are used to model this. This will eventually progress onto children being able to apply partitioning and bridging ten to larger numbers where the tens boundary is crossed, such 38 + 13. Children will be taught to partition the 13 into 10 and 3, and then the 3 into 2 and 1. This will lead to the calculation 38 + 2 = 40. 40 + 1 = 41. 41 + 10 = 51. This will be shown in jumps on a number line.	 23 + 10 = 33  38 + 11 = 49  9 + 5 = 14  
	Stage 4	Children are introduced to the foundations of the formal written method for addition. Children are taught to write the numbers that they are adding into lined up place value columns, using one digit per box on their maths paper to help them with this. Children are taught to add the place value columns from smallest to largest. In this stage, no exchanging will be required, as children are focused on the concept of adding through partitioning, and that they must add each place value column at a time, starting with the smallest, and write their answer underneath each corresponding column. Dienes may be used here to support the concept of adding each place value column at a time.	

Hunnyhill Primary School – Calculation Policy

Updated: November 2021

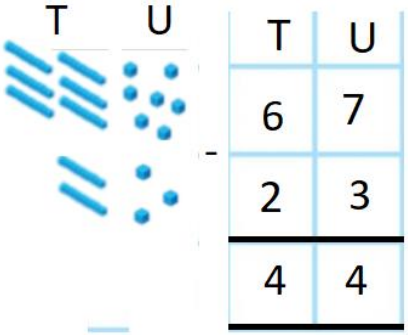
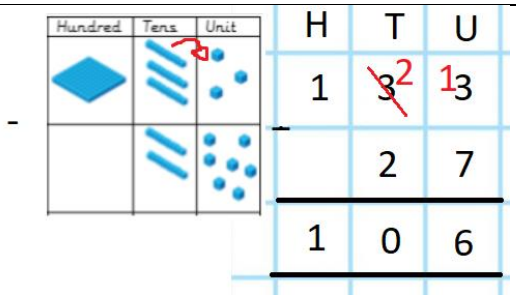
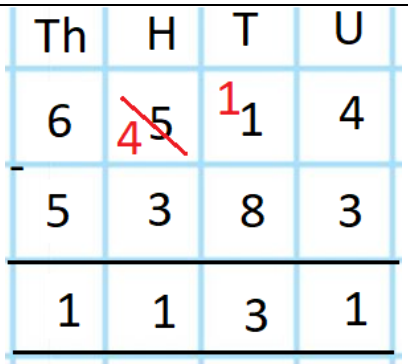
	Stage 5	Children are reminded that 10 units can be exchanged for 1 ten, and that this will help them with addition. Children are reminded to line up their place value columns and use one digit per box to help them organise this. Children are taught to add the smallest place value column first, and that if this total is more than 10 then they need to exchange ten of these for the next place value column along (for example, 10 units exchange for 1 ten) and that write this in the tens column, in the exchange row. Dienes will be used here to represent the concept of exchanging.	
	Stage 6	Children will be taught to apply the formal written method for addition to larger numbers. Children will be taught mental methods for addition and how to decide whether mental or written methods would be most efficient for solving the problem.	
Progression in Written Subtraction	Stage 1	Children are taught that subtraction is when we take an amount away from a total. This is introduced by using concrete resources that they can physically count and manipulate. They begin by counting all the objects in the group, showing their one-to-one correspondence, and then progress onto taking some of that group away. Jottings may be used here, alongside concrete resources, to represent the number of objects in total at the start and then the number once some have been taken away.	

Hunnyhill Primary School – Calculation Policy
Updated: November 2021

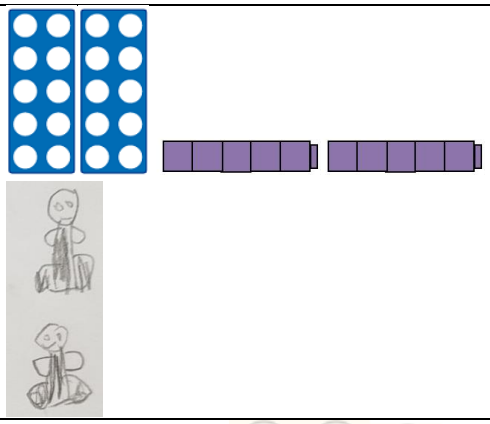
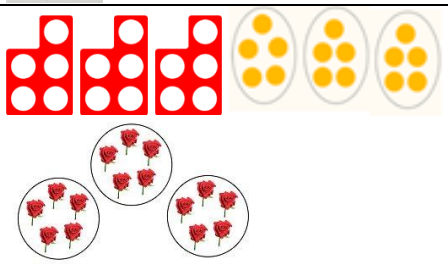
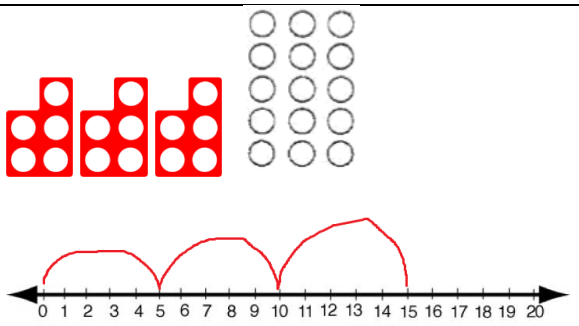
	Stage 2	Children are taught the symbols for subtraction (-) and equals (=) to help them begin to write subtraction number sentences. These will be linked to the use of concrete resources, such as Dienes or Numicon, or pictorial representations, such as number lines or jottings, to represent the numerals and symbols in the number sentences. Children will subtract singular units at a time.	
	Stage 3	Children are taught to use their understanding partitioning to help them subtract in more efficient ways. For example, children will understand that we can subtract a ten by taking 1 ten away from tens digit, rather than subtracting 10 singular units/ones. For example: 23 - 10 = 13, we only subtracted one ten rather than 23 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 = 13. Using concrete resources, such as Dienes, will support this. This will progress onto children being taught to apply partitioning to larger numbers, that do not bridge ten, such 38 - 11. Here, children will be taught to partition the tens and units/ones and to subtract these separately – e.g., 38 - 1 = 37. 37 - 10 = 27. Children are then taught to 'bridge ten' as a more efficient strategy for addition when the tens boundary is crossed, for example, with 14 - 5, instead of 14 - 1 - 1 - 1 - 1 - 1, the child will be taught to partition the 5 into 4 and 1, and subtract these parts separately to reach the total. 14 – 4 - 1. Tens frames are used to model this. This will eventually progress onto children being able to apply partitioning and bridging ten to larger numbers where the tens boundary is crossed, such 33 - 14. Children will be taught to partition the 14 into 10 and 4, and then the 4 into 3 and 1. This will lead to the calculation 33 - 3 = 30. 30 – 1 = 29. 29 – 10 = 19. This will be shown in jumps on a number line.	

Hunnyhill Primary School – Calculation Policy

Updated: November 2021

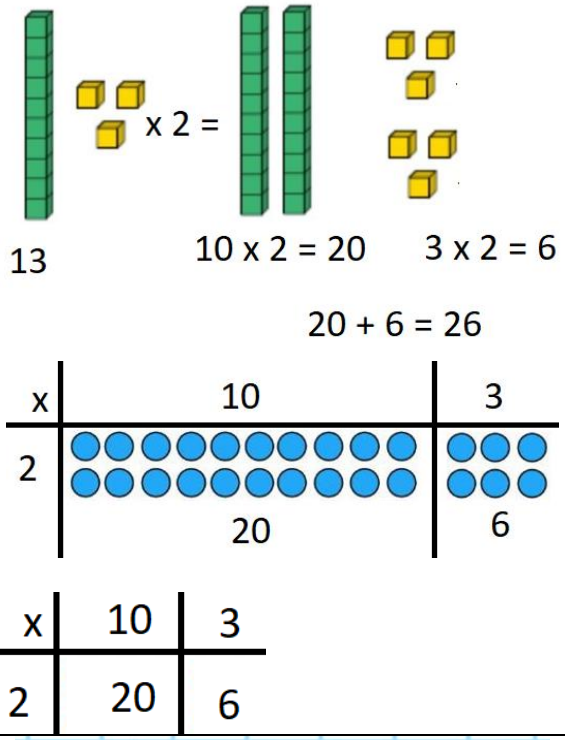
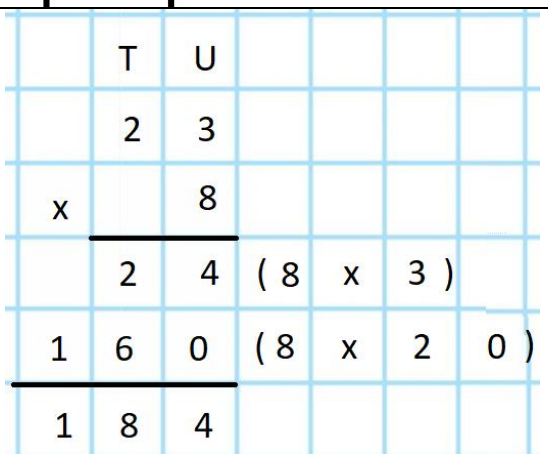
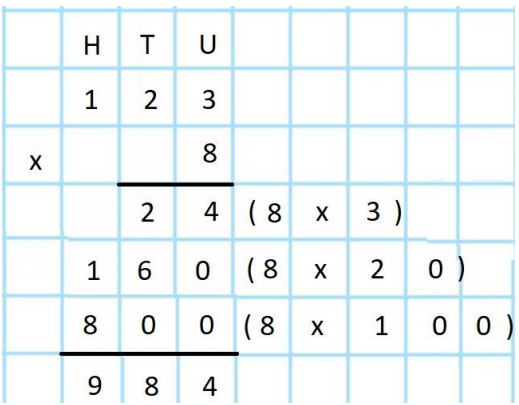
	Stage 4	Children are introduced to the foundations of the formal written method for subtraction. Children are taught to write the total number and the number that they are subtracting into lined up place value columns, using one digit per box on their maths paper to help them with this. Children are taught to subtract the place value columns from smallest to largest. In this stage, no exchanging will be required, as children are focused on the concept of subtracting through partitioning, and that they must subtract the bottom number from the number above it and write their answer underneath each corresponding column. Dienes may be used here to support the concept of subtracting each place value column at a time.	
	Stage 5	Children are reminded that 1 ten can be exchanged for 10 units, and that this will help them with subtraction. Children are reminded to line up their place value columns and use one digit per box to help them organise this. Children are taught to subtract the smallest place value column first, and that the bottom number must be subtracted from the number above it, and that we cannot reverse this order. If the bottom digit is larger than the digit above it (for example 3 – 7), this total will be a negative number (3 – 7 = -4), and so we need to carry over from the next place value column, to help us subtract. Children are taught to carry one from the next place value column along into the column that they are working in, and that show this by crossing out and rewriting the column we have carried from. We then write the new amount in the column that we are working in, remembering to combine this carried amount with the original number. Dienes will be used here to represent the concept of exchanging.	
	Stage 6	Children will be taught to apply the formal written method for subtraction to larger numbers. Children will be taught mental methods for subtraction and how to decide whether mental or written methods would be most efficient for solving the problem.	

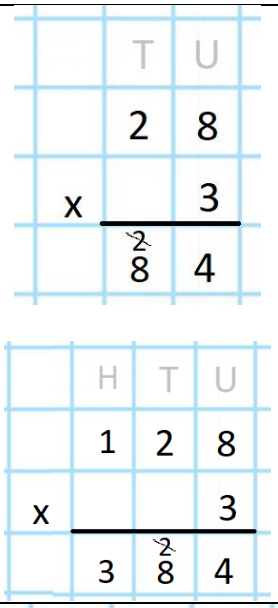
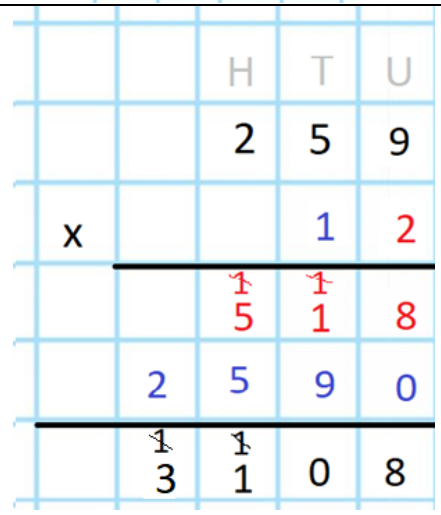
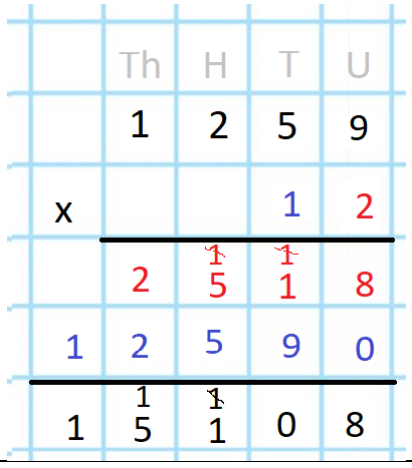
Hunnyhill Primary School – Calculation Policy
Updated: November 2021

Progression in Written Multiplication	Stage 1	Children are taught to develop an understanding of the size of numbers and the concept that numbers can be repeated in equal groups. Children are taught the concept of doubling meaning to repeat an equal group twice. Concrete resources and jottings are used here.	
	Stage 2	Children are taught the concept of 'repeated addition' and that this is done by repeating equal groups of a number to reach a total. The term 'groups' is used here – for example, 3 groups of 5 means that I have repeated 5 three times and that this has led me to the total of 15. This is supported by concrete resources and pictorial representations.	
	Stage 3	Children are introduced to the multiplication (x) symbol and are reminded about the equals symbol (=). They are taught to write multiplication number sentences using these symbols and how they link to the concept of repeated addition. For example: 3 x 5 = 5 + 5 + 5. Concrete resources, such as Numicon, and pictorial representations, such as arrays, are used here to represent this concept.	 5 + 5 + 5 = 15 3 x 5 = 15 3 x 5 = 5 + 5 + 5

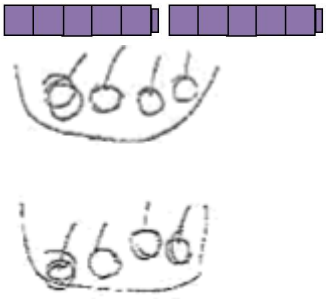
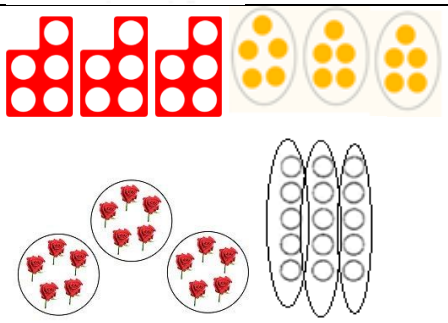
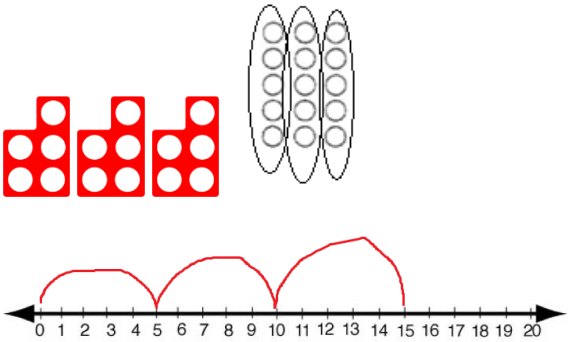
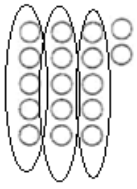
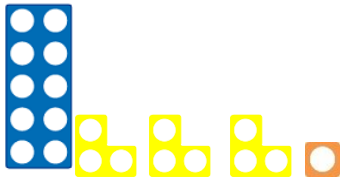
Hunnyhill Primary School – Calculation Policy

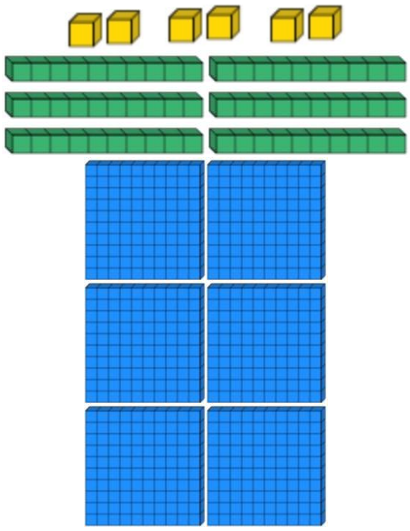
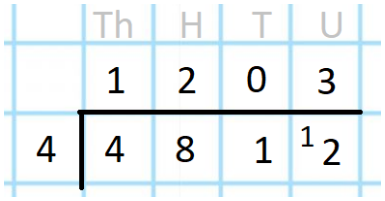
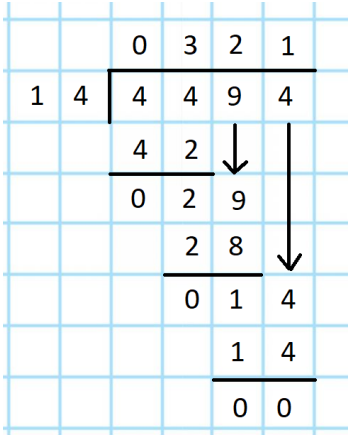
Updated: November 2021

	Stage 4	Children are taught to use partitioning to help them solve two-digit x one-digit multiplication number sentences. Children are taught that we can partition the two-digit number into tens and units, and then multiply both of these separately by the one-digit number. For example: with 13 x 2, we would partition the 13 into 10 and 3 and multiply the tens by the one-digit number (10 x 2) and the units by the one digit number (3 x 2) and add the two totals together to reach the total (product). Concrete resources, such as Dienes, and pictorial representations, such as arrays are used to support this concept. Once children are confident with the idea of partitioning to calculate multiplication number sentences, they are taught to show this inside a multiplication grid, initially using arrays or Dienes to support and then once the concept has been secured using numerals.	 x | 10 | 3 2 | 20 | 6
	Stage 5	Children are taught to apply their knowledge of partitioning to multiply larger numbers to the formal written method of expanded short multiplication. This is initially taught using two-digit x 1-digit multiplication number sentences, where children are shown to line up their place value columns with one-digit per box, and the numbers they are multiplying together lined up in their respective columns. Children are taught to multiply the units x units first, and then write their answer in the answer row in the respective place value columns. Next to this answer, on the right, children are taught to write the multiplication number sentence that led them to that answer in brackets. On the next row in the answer column, children are taught to multiply the units x tens, and again write this answer in the answer row with the multiplication number sentence to the right hand side in brackets. Children are taught that we then re-combined the partitioned calculations to find the total and that we do this by adding them together using the formal written method for addition. Once confident in doing this, children are progressed onto repeating this process with 3-digit x 1 digit numbers.	 

	Stage 6	Children are taught to apply their knowledge of expanded short multiplication to compact short multiplication. This is firstly introduced by multiplying a two-digit number x one-digit number. Children are reminded to multiply the units x units first, and to write their answer in the answer row in the units column. If their answer is above 10, they will need to exchange ten units for one ten, and write this in the tens column on the answer row. Children are taught to then multiply the units x tens, and to write the answer in the same row but in the tens column, remembering to add any exchanged tens in the process. Once confident with this, children will be taught this method for multiplying three-digit numbers by one-digit numbers.	
	Stage 7	Children are taught the formal written method for long multiplication. This is initially taught by multiplying a three-digit number by a one-digit number. Children are taught to multiply out the units by the three-digit number first, and write this answer in the first answer row. We begin with units x units, and write the answer in the respective place value columns (remembering to exchange and carry over to the next column when necessary). They then multiply the units x tens, and repeat this process. They then multiply the units x hundreds, and repeat the process again. Children are then taught to multiply out the tens by the three-digit number in a new answer row, but must first remember to write the place holder (0) in the units column, as we are now multiplying tens and not units so our answers will be ten times bigger. Children are taught to repeat the same process they used for multiplying out the units but for the tens. Children are then taught to add their two totals (products) together using column addition. This will give them their total answer (product) in the final row. Once confident, children are taught to apply this to 4-digit numbers x 2-digit numbers.	 

Hunnyhill Primary School – Calculation Policy
Updated: November 2021

Progression in Written Division	Stage 1	Children are taught to develop an understanding of the size of numbers and the concept that numbers can be equally shared or equally grouped. Concrete resources and jottings are used here.	
	Stage 2	Children are introduced to the division (÷) symbol, and are reminded about the equals symbol (=). They are taught to write division number sentences using these symbols and how they link to the concept of sharing into equal groups and how many would be in each group. For example: 15 ÷ 3 means that we have 15 that needs to be shared into 3 equal groups. This will leave us with 5 in each group. Concrete resources, such as counters, and pictorial representations, such as jottings and arrays, are used here to represent this concept.	 15 shared into 3 groups – 5 in each group 15 ÷ 3 = 5
	Stage 3	Children are taught the concept of grouping through 'repeated subtraction' and how some division problems are asking them 'how many groups of ___ make ___?'. That this is done by subtracting the same amount from a total until they reach 0, or counting up in the multiple until they reach the number they were dividing. For example: if we had 15 and needed to put it into groups of 5, we would subtract 5s from 15 until we had nothing left to group, or count up in 5s until we reached 15. Children would be taught to see that there were 3 groups of 5 in 15, and that we can use our knowledge of times tables here to help us with this. This is supported by concrete resources and pictorial representations.	 15 shared into groups of 5 15 ÷ 5 = 3 15 – 5 – 5 – 5 = 0 15 ÷ 5 = 15 – 5 – 5 - 5
	Stage 4	Children are introduced to the idea that in some division calculations, we have remainders, as the number doesn't entirely split into equal groups. Concrete resources or pictorial representations are used to support this concept. Children are taught when or if it is appropriate to round the remainder up or down, depending on the context of the problem. For example: a bus can transport 10 people. How many buses are needed to transport 55 people? Here, we would think about how many 10s go into 55, and whether we would have any remaining people. We cannot have 5 whole buses and part of a bus transporting the remaining 5 people, so we would need 6 buses.	 17 ÷ 5 = 3r2 17 ÷ 3 = 5r2  10 ÷ 3 = 3r1

	Stage 5	Children are taught to apply their times tables and related division facts to larger numbers. For example, if we know that 6 ÷ 3 = 2, then we know that 60 ÷ 3 = 20, and 600 ÷ 3 = 200.	
	Stage 6	Children are taught the formal written method for short division. They are taught to write one digit per box on their maths paper, one box per place value column. They begin by writing the number that they are dividing (the dividend) and drawing a horizontal line above this and a vertical line to the left of this. They are taught to write the number they are dividing by (the divisor) to the left. They are taught to divide the largest place value column first and to see this through the division method of grouping – 'how many groups of __ make __?' Children are taught to write the answer to each step in the correct place value box in the answer row (above the horizontal line) and to carry over any remainders into the next column. Children repeat this process for the second largest place value column, and repeat this until they have reached the end of the whole number. If any numbers are remaining, children are initially taught to write the remainder at the end. Once children are secure with this method, they are taught to write the remainder as a decimal.	 Step 1: How many 4s go into 4(thousands)? Step 2: How many 4s go into 8(hundreds)? Step 3: How many 4s go into 1(ten)? Step 4: How many 4s go into 12(units)?

	Stage 7	Children are taught the formal written method for long division, whereby they divide 3- and 4-digit numbers by 2-digit numbers. Children are reminded how to find the times tables facts for any times table by using related facts. Children are reminded that in formal division, we begin by dividing the largest place value column first, and that as we are now dividing by 2-digit numbers, we will need to divide the 2 largest place value columns first (which in the example to the right is the thousands and hundreds digits). We remind children that we are seeing this as grouping, so 'how many groups of ___ go into ___?'. Children are taught to write the total number of groups in the answer row and then subtract the total from the part of the division they are working with, and to write this as column subtraction. This will give them the remainders. They are taught to drag the next column down to combine with this remainder to create a new number to divide by the divisor. This process is repeated until all place value columns have been divided.