The Park Federation
Academy Trust
Lake Farm Park Academy

Calculation Progression Policy
November 2022

Section 1: Introduction

This calculation policy has been created to meet the expectations of the National Curriculum but most importantly the learning needs of our children at LFPA. The methods chosen match the National Curriculum but have also been specifically selected after consideration.

Curriculum expectations

The policy has been organised by stages rather than ages. The curriculum focuses on skills and is not about moving children through the methods as soon as they can do the one before. Working on more complex and richer problems, rather than new methods, will support this **'mastering'** of maths. With this in mind, it is crucial that children are not moved on to the next method, until they have a secure understanding of the previous one. By Year 6, all children need to have been exposed to all of the methods and have had the opportunity to explore, including children with additional needs. They should be encouraged to adopt a method that will help them answer the question in the most efficient way.

Mental Methods

The written methods in this document are important but they by no means replace the **mental methods** we have developed. As children become more mature and confident with their calculation, they need to think about the most appropriate method to answer the question: mental method, written jottings or formal written method.

Breadth, Challenge and Application

Although initially these methods should be taught thoroughly without context focussing on children's deep understanding of the method, children should also have plenty of opportunity in **applying their understanding** to other problems within mathematics and across the curriculum. Once children have secured a few methods, they should be able to choose the one that is the most appropriate for the problem and the best for them.

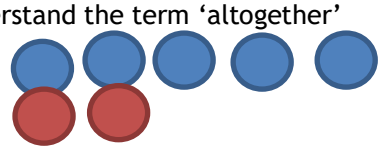
Section 2: Addition

Stage 1: Concrete

Children should start adding by using concrete materials. These could be counters, numicon, teddies, buttons or anything else that they can get their hands on.

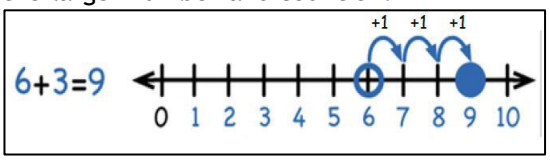
They will work on the understanding that adding more makes the amount bigger or more. They will need to understand the term 'altogether'

5 + 2 =



Stage 2: Number line

Children should use numbered number lines to add, by counting on in ones. Encourage children to start with the larger number and count on.

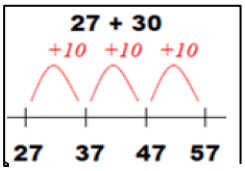


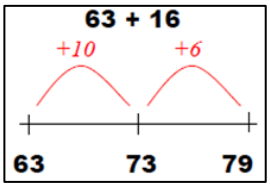
Children should have access to a wide range of counting equipment, everyday objects, number tracks and number lines, and be shown numbers in different contexts.

They should be exposed to interpret addition number sentences and solve missing box problems, using concrete objects and number line addition to solve them: 8 + 3 = □ 15 + 4 = □ 5 + 3 + 1 = □ □ + □ = 6

Stage 3: Number line intervals

In year 2 children should develop mental fluency with addition and place value involving two digit numbers, then establish more formal methods.





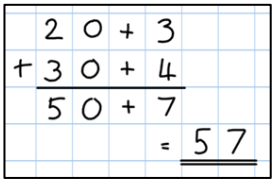
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

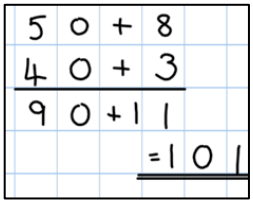
16 + 32

10
20
30 1 2

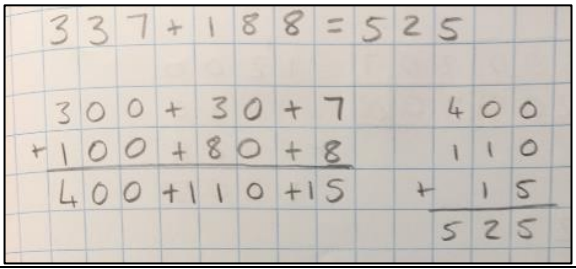
Stage 4a: partitioning

When introducing the column method, show children how we partition the number. When we add the Tens, we are adding 20 and 30 not 2 and 3. Then compare to column method.



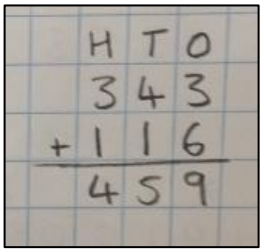


Stage 4b: 3-4 digit numbers

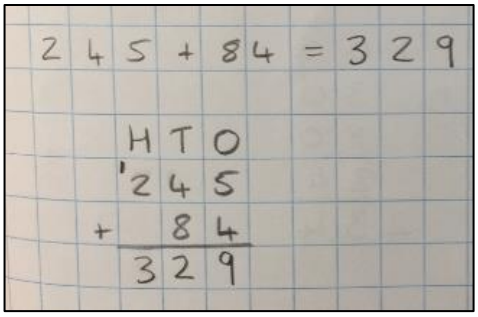


Stage 5: column method

Children can move onto the column method when they have a secure understanding of partitioning.

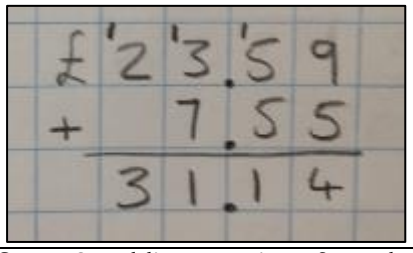


Stage 6: column method (carrying)
Children can move onto the column method when they have a secure understanding of partitioning.



- Start with the units
- Carry numbers on top of the column (can circle number to make it stand out).
- Place value of each digit e.g. the five is 500 not 5!
- 0 can be used as a place holder when a digit is missing.

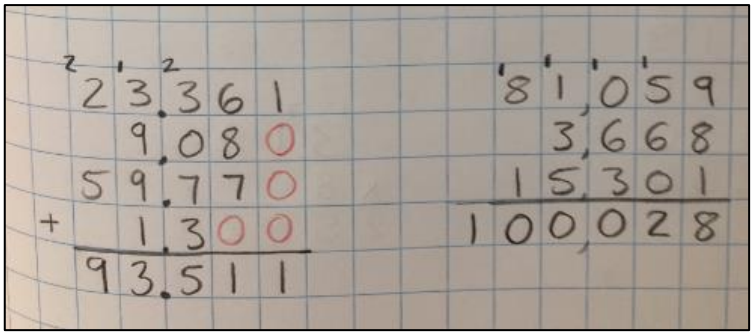
Stage 7: decimals
Children will now use the column method to add decimal numbers in the context of money and measures. It is important that children have place value skills beyond 4 digits here and fully understand what a decimal number represents.



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.

Stage 8: adding a series of numbers of increasing complexity
Children need to use all the previous adding skills developed to add several numbers with a variety of different decimal places. Many of these problems will be in the context of money or 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.



Vocabulary

Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, addition, column, tens boundary	add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, plus, addition, column, tens boundary, hundreds boundary, increase, vertical, carry, expanded, compact, thousands, hundreds, digits, inverse	add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line , sum, tens, units, partition, plus, addition, column, tens boundary, hundreds boundary, increase, carry, expanded, compact , vertical, thousands, hundreds, digits, inverse, decimal places, decimal point, tenths, hundredths, thousandths

Key skills

Year 1 Reading and writing numbers to 100 in numerals. Writing numbers to 20 in words including correct spelling. Counting to and across 100 in ones. Counting in multiples of 2, 5 and 10. Solving simple one step addition problems: using objects, number lines and images to support.	**Year 2** Add a 2 digit number and units and a 2 digit number and 10s. Add pairs of 2 digit numbers. Add three single digit number. Know and show that adding can be done in any order (the commutative law). Recall bonds to 20 and multiple of 10 bonds to 100. Count in steps of 2,3 and 5 and count in 10s from any number. Understand the place value of 2 –digit numbers (tens and ones). Compare and order numbers to 100 using < > and = signs. Read and write numbers to at least 100 in numerals and words. Solve contextual addition problems.
Year 3 Read and write numbers to 1000 in numerals and words. Add 2-digit numbers mentally, incl. those exceeding 100. Add a three-digit number and ones mentally (175 + 8) Add a three-digit number and tens mentally (249 + 50) Add a three-digit number and hundreds mentally (381 + 400) Estimate answers to calculations, using inverse to check answers. Solve problems, including missing number problems, using number facts, place value, and more complex addition. Recognise place value of each digit in 3-digit numbers (hundreds, tens, and ones.) Continue to practise a wide range of mental addition strategies, ie. number bonds, adding the nearest multiple of 10, 100 and adjusting, using near doubles, partitioning and recombining.	**Year 4** Select most appropriate method: mental, jottings or written and explain why. Recognise the place value of each digit in a four-digit number. Round any number to the nearest 10, 100 or 1000. Estimate and use inverse operations to check answers. Solve 2-step problems in context, deciding which operations and methods to use and why. Find 1000 more or less than a given number. Continue to practise a wide range of mental addition strategies, ie. number bonds, add the nearest multiple of 10, 100, 1000 and adjust, use near doubles, partitioning and recombining. Add numbers with up to 4 digits using the formal written method of column addition Solve 2-step problems in contexts, deciding which operations and methods to use and why. Estimate and use inverse operations to check answers to a calculation.
Year 5 Add numbers mentally with increasingly large numbers, using and practising a range of mental strategies ie. add the nearest multiple of 10, 100, 1000 and adjust; use near doubles, inverse, partitioning and re-combining; using number bonds. Use rounding to check answers and accuracy. Solve multi-step problems in contexts, deciding which operations and methods to use and why. Read, write, order and compare numbers to at least 1 million and determine the value of each digit. Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000. Add numbers with more than 4 digits using formal written method of columnar addition.	**Year 6** Perform mental calculations, including with mixed operations and large numbers, using and practising a range of mental strategies. Solve multi-step problems in context, deciding which operations and methods to use and why. Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy. Read, write, order and compare numbers up to 10 million and determine the value of each digit. Round any whole number to a required degree of accuracy. Pupils understand how to add mentally with larger numbers and calculations of increasing complexity.

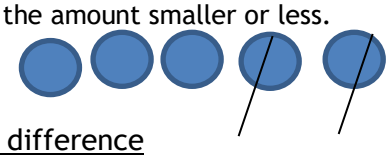
Section 3: Subtraction

Stage 1: Concrete

Children should start subtracting by using concrete materials. These could be using counters, numicon, teddies, buttons or anything else that they can get their hands on.

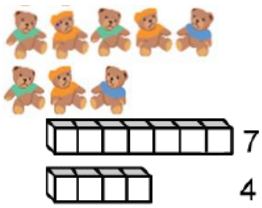
They will work on the understanding that subtracting/ taking away makes the amount smaller or less.

5 - 2 =



<u>Finding the difference</u>

This should be introduced practically first with an emphasis on the language 'find the difference between' and 'how many more'

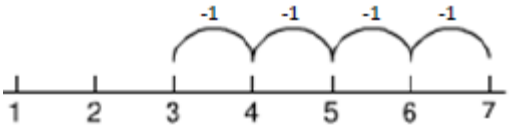


Tom has 5 bears. Sara has 3 bears. How many more bears does Tom have?

What is the difference between seven and four?

Stage 2: Number line

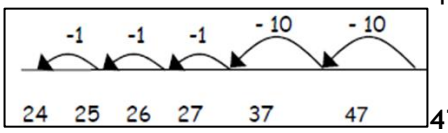
Consolidate understanding of subtraction practically before moving on to using number tracks then numbered number lines and hundred squares to subtract by counting back in ones and tens.



$7 - 4 = 3$

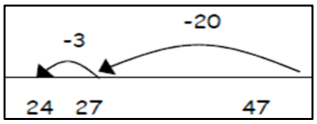
Stage 3: Number line intervals

Children will start to use blank number-lines to subtract by counting back which will greatly support the development of mental subtraction skills. This also applies to 100 square.



47 - 23.

Partition the second number into tens and ones. Subtracting the tens first



Move towards more efficient jumps.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

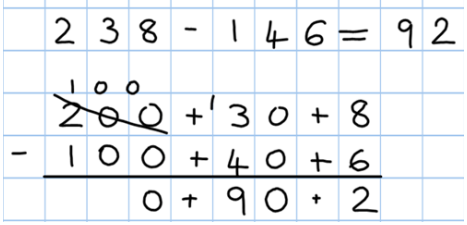
20

10

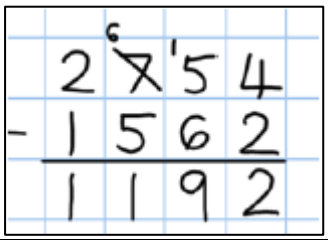
30 - 23

Stage 4: partitioning

Once children are confident in subtracting mentally and using a number line they should be introduced to the partitioned column method. Introduce exchanging through practical subtraction. Make the larger number with Base 10/Dienes, then subtract 47 from it. Once pupils are secure with the understanding of "exchanging", they can use the partitioned column method to subtract any 2 and 3-digit numbers.



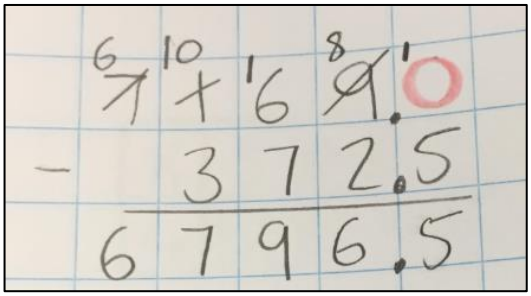
Stage 5: column method
Children can move onto the column method when they have a secure understanding of partitioning.



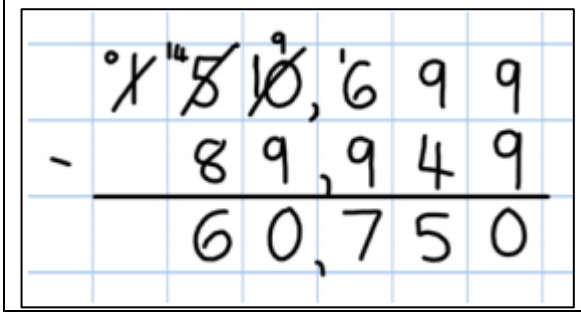
Once children are secure with 'exchanging' up to 4-digits, they can move on to the compact column method to subtract up to 4-digit numbers. Begin by asking children to complete a subtraction calculation using the partitioned column subtraction and then display the compact version. Discuss what is the same, what is the different and the benefits of each method.

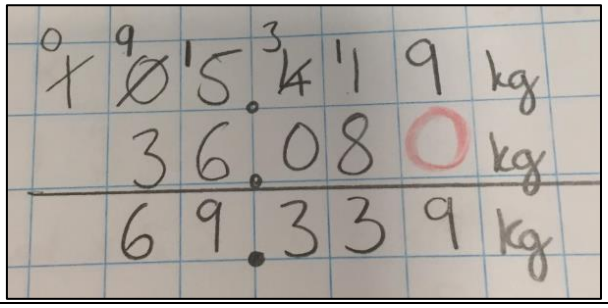
Stage 6: decimals
Children will now use the column method to subtract decimal numbers in the context of money and measures. It is important that children have place value skills beyond 4 digits here and fully understand what a decimal number represents.

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.



Stage 7: Subtracting with increasingly large and more complex numbers and decimal values
Children will use the compact method to solve problems involving integers up to 6 digits and beyond and solve problems where they will need to use 'exchanging' several times. They will also solve problems in context involving increasingly large decimals. They will need to continue using their knowledge of decimal points to line up their numbers and place zeroes in any empty places so they fully understand the value of that.





Vocabulary

Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back , how many left, how much less is_? difference, count on, strategy, partition, tens, units	Equal to, take, take away, less, minus, subtract, leaves, distance between, difference between, how many more, how many fewer/less than, most, least, count back, how many left, how much less is_?, count on, strategy, partition, tens, units, exchange, decrease, hundreds, value, digit, inverse.	Equal to, take, take away, less, minus, subtract, leaves, distance between, difference between, how many more, how many fewer/less than, most, least, count back, how many left, how much less is_?, count on, strategy, partition, tens, units, exchange, decrease, hundreds, value, digit, inverse, tenths, hundredths, decimal place, decimal

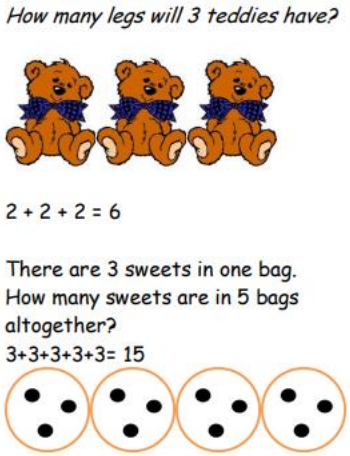
Key skills

Year 1 Given a number, say one more or one less. Count to and over 100, forward and back from any number in 1s. Represent and use subtraction facts to 20 and within 20. Subtract with one digit and 2 digit numbers to 20, including zero. Solve one step problems that involve subtraction using objects, pictures and numbered lines. Read and write numbers to 100 in numerals. Write numbers in words to 20s, including correct spelling.	**Year 2** Recognise the place value of each digit in a two-digit number. Recall and use subtraction facts to 20 fluently, and derive and use related facts to 100. Subtract using concrete objects, pictorial representations, 100 squares and mentally, including: a two-digit number and ones, a two-digit number and tens, and two two-digit numbers. Show that subtraction of one number from another cannot be done in any order. Recognise and use inverse relationship between addition and subtraction, using this to check calculations and missing number problems. Solve simple addition and subtraction problems including measures, using concrete objects, pictorial representation, and also applying their increasing knowledge of mental and written methods.
Year 3 Subtract mentally a: 3-digit number and ones, 3-digit number and tens, 3-digit number and hundreds. Estimate answers and use inverse operations to check. Solve problems, including missing number problems. Find 10 or 100 more or less than a given number. Recognise the place value of each digit in a 3-digit number. Counting up differences as a mental strategy when numbers are close together or near multiples of 10 (see examples above) Read and write numbers up to 1000 in numerals and words. Practise mental subtraction strategies, such as subtracting near multiples of 10 and adjusting (e.g. subtracting 19 or 21), and select most appropriate methods to subtract.	**Year 4** Subtract by counting on where numbers are close together or they are near to multiples of 10, 100 etc. Children select a mental, written or jotting method depending on what the problem requires. Children estimate and use the inverse operation to check a problem. Children solve 2 step problems involving + and -, picking the correct operation and method. Children solve simple money and measure problems with fractions and decimals. Find 1000 more or 1000 less than a given number. Count backwards through zero including negative numbers. Recognise the place value of each digit in a 4 digit number. Round any number to the nearest 10, 100 or 1000. Solve number and practical problems that involve increasingly large positive integers.
Year 5 Subtract numbers mentally with increasingly large numbers. Use rounding and estimation to check answers to calculations and determine, in a range of contexts, levels of accuracy. Solve addition and subtraction multi-step problems in context, deciding which operations and methods to use and why. Read, write, order and compare numbers to at least 1 million and determine the value of each digit. Count forwards or backwards in steps of powers of 10 for any given number up to 1 million. Interpret negative numbers in context, counting forwards and backwards with positive and negative integers through 0. Round any number up to 1 million to the nearest 10, 100, 1000, 10 000 and 100 000.	**Year 6** Solve addition and subtraction multi step problems in context, deciding which operations to use and why. Read, write, order and compare numbers to at least 10 million and understand the value of each digit. Round any whole number up to 10 million to the nearest 10, 100, 1000, 10 000, 100 000, or 1 million. Use negative numbers in context and calculate intervals across zero. Look at a calculation and decide whether you need to use a mental method, a jotting, a written method or a calculator to solve

Section 4: Multiplication

Stage 1: Concrete

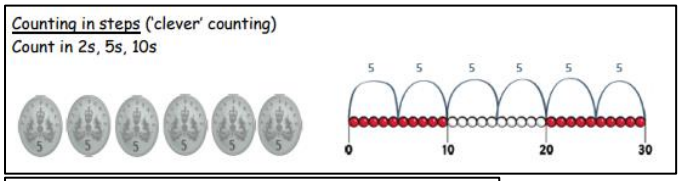
Children will be exposed to many different multiplication based activities in a variety of contexts. Much of this will be repeated addition activities or be linked to counting in 2s, 5s or 10s.

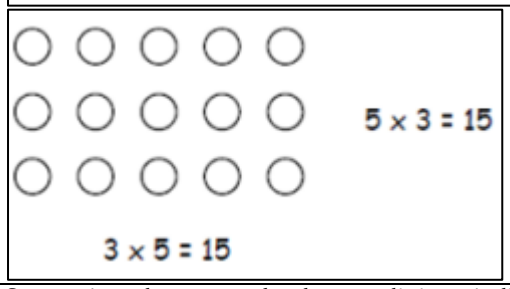


Give children experience of counting equal group of objects in 2s, 5s and 10s. Present practical problem solving activities involving counting equal sets or groups.

Stage 2: arrays and pictorial

Children will be aware of simple arrays and pictorial representations and understand what they mean. In year 2 children will develop the knowledge of how to make their own arrays to solve a problem and also how repeated addition on a number line can get them to a solution.





Stage 3: grid method- two digit x 1 digit

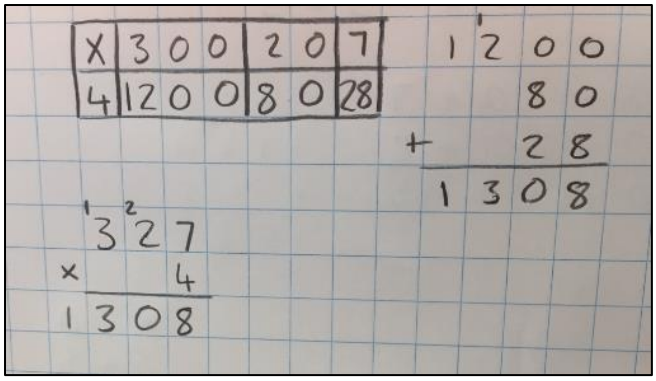
Children will move on from arrays and start using the grid method of multiplication. It is essential that before children move onto the grid method they are completely confident with all previous methods and have a solid grounding with mental methods and partitioning.

Eg. 23 x 8 = 184

X	20	3
8	160	24

Stage 4: column method- two digit x 1 digit

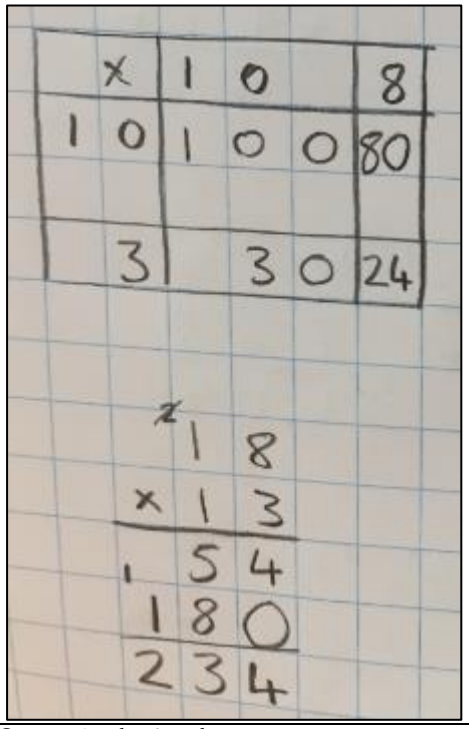
Once the understanding of arrays is there, children can move onto column methods. Make links between the 2 methods.



Pupils could be asked to work out a given calculation using the grid, and then compare it to „your" column method.

What are the similarities and differences? Unpick the steps and show how it reduces the steps.

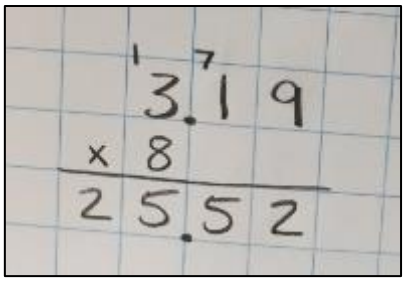
Stage 5: column method – more than 1 digit
Children can move onto the column method when they have a secure understanding of partitioning.



When multiplying by more than 1 digit, children need to use long multiplication. Like with short multiplication, they will solve the problem using the grid method first and then make comparisons until their understanding is secure. In the example below the top row shows 18 x 3 and the bottom shows 18 x 10. The final row shows the total of both calculations.

Once long multiplication methods are secure, children are ready to move on to more challenging problems which require greater levels of mental calculation. The problem to the right show 1234 x 6 on the top line, 1234 x 10 on the bottom line and the total of both calculations on the final row.

Stage 6: decimals
When multiplying decimals it is important to remember that the digit you are multiplying by needs to be lined up with the ones digits. As with all decimal work, the decimal points must be lined up and the children need to have a clear understanding why that is.



Vocabulary

Key Stage 1	**Lower Key Stage 2**	**Upper Key Stage 2**
Groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, times as big as, once, twice, three times	groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, array, column, row, commutative, groups of, sets of, lots of, equal groups, times, multiply, times as big as, once, twice, three times... partition, grid method, total, multiple, product, sets of, inverse	Groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, times as big as, once, twice, three times, partition, grid method, multiple, product, tens, units, value, inverse, square, factor, integer, decimal, short/long multiplication, carry, tenths, hundredths, decimals

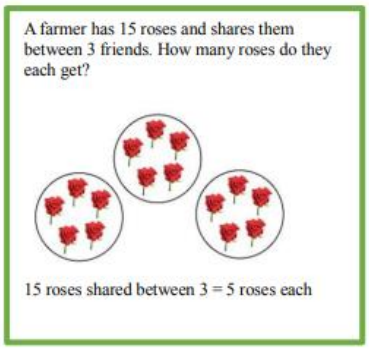
Key skills

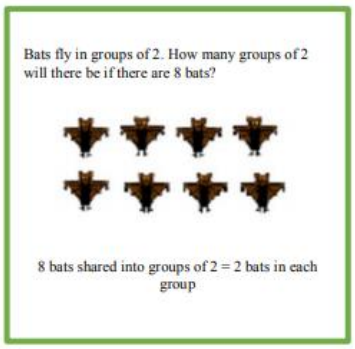
Year 1 Count in multiples of 2, 5 and 10. Solve one-step problems involving multiplication, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. Make connections between arrays, number patterns, and counting in twos, fives and tens. Begin to understand doubling using concrete objects and pictorial representations.	**Year 2** Count in steps of 2,3 and 5 from zero and in 10s from any number. Recall and use multiplication facts for the 2,5 AND 10 times tables. Recognise odd and even numbers. Write and calculate number statements using the x and = signs. Show that multiplication can be done in any order (the commutative law). Solve a range of multiplication problems using objects, arrays, repeated addition, mental methods and multiplication facts. Use and become familiar with all of the above multiplication language.
Year 3 Recall and use multiplication facts for the 2, 3, 4, 5, 8 and 10 multiplication tables, and multiply multiples of 10. Write and calculate number statements using the multiplication tables they know, including 2-digit x single-digit, drawing upon mental methods, and progressing to reliable written methods. Solve multiplication problems, including missing number problems. Develop mental strategies using the commutative law (e.g. 4 x 12 x 5 = 4 x 5 x 12 = 20 x 12 = 240) Solve simple problems in contexts, deciding which operations and methods to use. Develop efficient mental methods to solve a range of problems e.g using the commutative law (4 × 12 × 5 = 4 × 5 × 12 = 20 × 12 = 240) and for missing number	**Year 4** Count in multiples of 6, 7, 9, 25 and 1000 Recall multiplication facts for all multiplication tables up to 12 x 12. Recognise place value of digits in up to 4-digit numbers Use place value, known facts and derived facts to multiply mentally, e.g. multiply by 1, 10, 100, by 0, or to multiply 3 numbers. 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. Solve problems with increasingly complex multiplication in a range of contexts.
Year 5 Identify multiples and factors, using knowledge of multiplication tables to 12x12. Solve problems where larger numbers are decomposed into their factors Multiply and divide integers and decimals by 10, 100 and 1000 Recognise and use square and cube numbers and their notation Solve problems involving combinations of operations, choosing and using calculations and methods appropriately	**Year 6** Multiply up to 4 digits by 2 digits using long multiplication. Solve mixed operation and large number problems using mental methods. Solve multi step problems involving a range of operations. Estimate and approximate answers of problems to improve accuracy. Round any integer to the determined level of accuracy.

Section 4: Division

Stage 1: Grouping and sharing

As an introduction to division, children will solve problems in familiar and relevant contexts where they have to group and share. They will use objects and pictorial representations to solve problems and they will begin to use counting in 2s, 5s and 10s to support their problems solving.

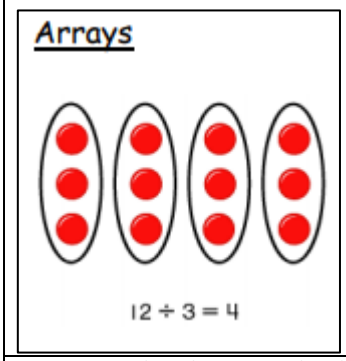




Children need to learn grouping and sharing alongside each other so they understand how they are linked. Grouping will also help children understand how multiplication can be used to solve division problems. Contextual problems will strengthen children's understanding of division.

Stage 2: Arrays

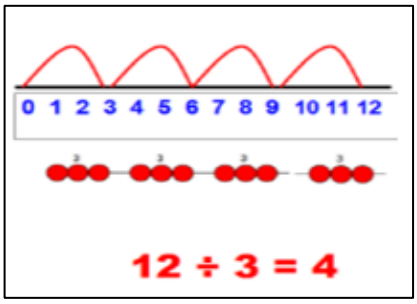
Children will continue to use the methods of sharing and grouping in division with objects to support their understanding of arrays for sharing and grouping.



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 = 3 if grouped horizontally

Stage 3: number line method

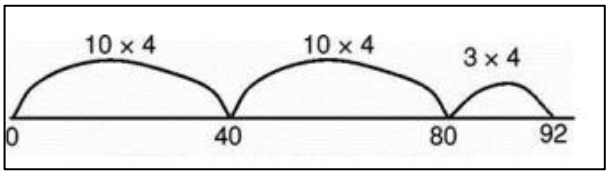
Group from zero in equal jumps of the divisor to find out "how many groups of _ in _ ?". Pupils could and using a bead string or practical apparatus to work out problems like "A CD costs £3. How many CDs can I buy with £12?"



This is an important method to develop understanding of division as grouping.

Stage 4: chunking method

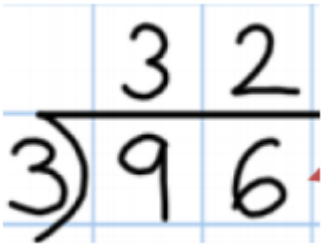
Children in year 3 will continue to use a number line to solve division problems and will begin to jump more than one step at a time in the style of 'chunking'. Once confident they will move on to short division without any remainders.



To solve this effectively they will need to subtract chunks of the divisor. As you can see in the image for 92 ÷ 4, a step of 10 groups of 4 has been jumped, followed by another step of 10 jumps, and finally followed by a step of 3 jumps of 4. This means that in total 4 was jumped 23 times making 23 the answer.

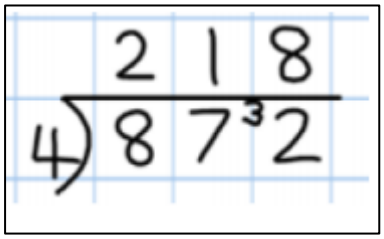
Stage 5: short division

Once children are confident with number line methods then they should start work on short division. First of all arrays should be used to show a division calculation, the same calculation should then be shown in the short multiplication method. Place value should be regularly discussed so children realize that they are partitioning the dividend and dividing the units then tens by the divisor.



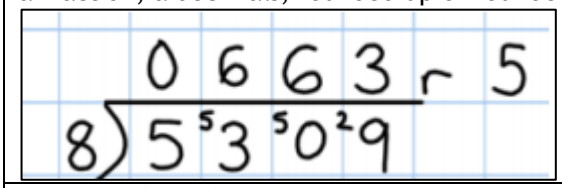
Stage 6: short division with remainders

Once confident with the method of short division, they will move on to problems where the first digit of the dividend is not a multiple of the divisor and therefore a remainder will need to be carried. Children may need to use other equipment to calculate the division and multiplication facts required.



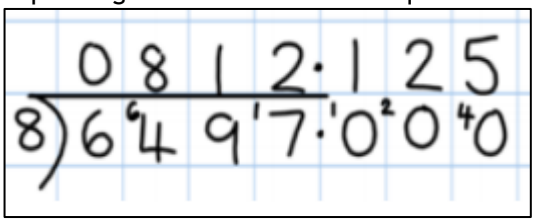
Children who can use short multiplication problems with remainders (but not those in the final answer) are now ready to work on 3 digit problems. Again, there should be remainders in the calculation but never in the final answer.

Children will then begin to solve division problems where a number up to 4 digits is divided by a single digit number including answers with remainders. These division problems need to be contextual so the children learn how to express the remainder- as a number, a fraction, a decimals, rounded up or rounded down.



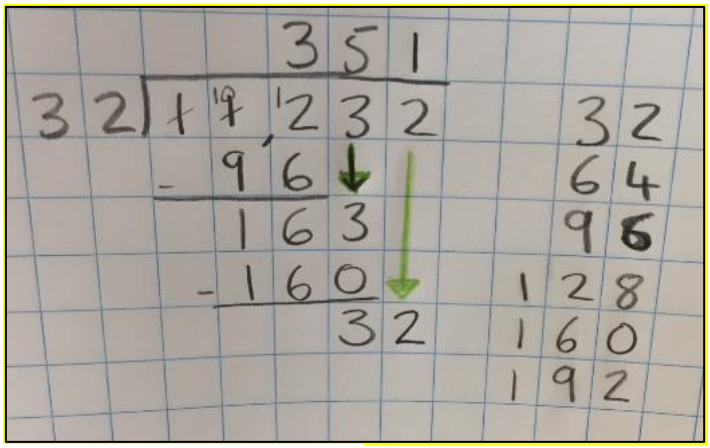
Stage 7: Short division

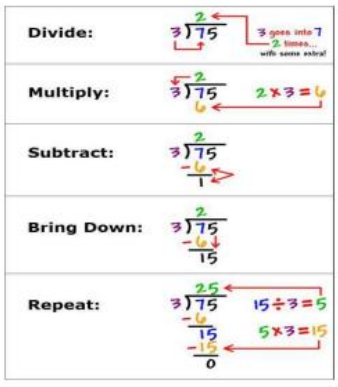
The next focus is not so much the method of short division but how the remainders are expressed- children need to express remainders as decimals and fractions depending on the context of the question.



Stage 8: long division

To divide by 2 digit numbers, the children will use the method of long division. The example to the right clearly shows the method in the 'Burger' steps, whereas the example to the left shows what a completed method would look like. Any remainders would need to be expressed in a way that matched the context of the problem.





Vocabulary

Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
Share, share equally, one each, two each…, group, groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over	Share, share equally, one each, two each…, group, groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, carry, remainder, multiple, divisible by, factor	Share, share equally, one each, two each…, group, groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, carry, remainder, multiple, divisible by, factor, quotient, prime number, prime factors, composite number (non-prime), common factor

Key skills

Year 1	Year 2
Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations arrays with the support of the teacher Through grouping and sharing small quantities, pupils begin to understand, division, and finding simple fractions of objects, numbers and quantities. They make connections between arrays, number patterns, and counting in twos, fives and tens.	Count in steps of 2,3 and 5 from 0. Recall and use x and ÷ facts for the 2,5 and 10 times tables. Solve division problems and write division number sentences for problems. Understand that division is not commutative unlike multiplication. Solve increasingly challenging division problems using concrete objects, arrays, and simple written methods such as grouping on a number line.
Year 3	**Year 4**
Recall and use and ÷ facts for the 2,3,4,5,6,8 and 10 x tables (using doubling to connect the 2,4 and 8 x tables) Solving division problems where a 2 digit number is divided by a 1 digit number using mental and written. Solve problems in a variety of contexts including missing number problems. Pupils begin to derive related facts e.g. 9 ÷ 3 = 3 means 90 ÷ 3 = 30 or 90 ÷ 30 = 3. Pupils develop confidence in written methods, moving from number lines to short division.	Recall multiplication and division facts for all numbers to 12 x 12. Use place value and known facts to derive facts mentally- including multiplying and dividing by 100, 10 and 1. Practise mental methods and extend this to three digit numbers using derived facts- e.g. 100 ÷ 5 = 20 so 20 x 5 = 100. Solve two step problems with increasingly harder numbers in a range of contexts, using language to identify the correct operation. Correspondence problems should be introduced such as 3 cakes are shared equally between 10 children, 1 man has 6 cats so how many cats do 3 men have etc.
Year 5	**Year 6**
Multiply and divide numbers mentally, using known facts. Identify multiples and factors, including all factor pairs of a number and common factors between 2 numbers. Solve x and ÷ problems where larger numbers are decomposed into their factors. Multiply and divide whole numbers and decimals by 10, 100 and 1000. Use vocabulary of prime numbers, prime factors and composite numbers. Work out whether a number up to 100 is prime and know all prime numbers to 30. Use and understand multiplication and division as inverses. Present division with remainders answers differently, showing the remainder as a fraction, decimal or whole number by rounding. Solve problems with a combination of all four operations including fraction scaling problems and problems involving simple rates.	Use multiplication and division facts up to 12 x 12 to solve more complex problems. Decide when to use short or long division and interpret remainders in a way that is appropriate to the problem. Perform mental calculations for problems involving large numbers and mixed calculations. Identify common factors, common multiples and prime numbers. Use estimation to check answers to calculations and determine accuracy. Use written methods of division to solve decimal problems up to 2 decimal places. Solve problems which require rounding to 10, 100, 1000 and beyond.