Alban Wood Primary and Nursery School

Calculation Policy

Overview

At Alban Wood we believe that children should be introduced to the processes of calculation through practical, oral and mental activities. As children begin to understand the underlying ideas they develop ways of recording to support their thinking and calculation methods, use particular methods that apply to special cases, and learn to interpret and use the signs and symbols involved. Over time children learn how to use models and images, such as empty number lines, to support their mental and informal written methods of calculation. As children's mental methods are strengthened and refined, so too are their informal written methods. These methods become more efficient and succinct and lead to efficient written methods that can be used more generally. By the end of Year 6 we want our children to be equipped with mental, written and calculator methods that they understand and can use correctly. They will do this by always asking themselves:

'Can I do this in my head?'

'Can I do this in my head using drawings or jottings?'

'Do I need to use a pencil and paper procedure?'

'Do I need a calculator?'

Our overall aim is that when children leave Alban Wood they:

- have a secure knowledge of number facts and a good understanding of the four operations;
- are able to use this knowledge and understanding to carry out calculations mentally and to apply general strategies when using one-digit and two-digit numbers and particular strategies to special cases involving bigger numbers;
- make use of diagrams and informal notes to help record steps and part answers when using mental methods that generate more information than can be kept in their heads;
- have an efficient, reliable, compact written method of calculation for each operation that children can apply with confidence when undertaking calculations that they cannot carry out mentally;
- use a calculator effectively, using their mental skills to monitor the process, check the steps involved and decide if the numbers displayed make sense.

Aim of Calculations Policy:

In setting out these aims, the intention is that teaching staff adopt greater consistency in their approach to calculation. The challenge for our teachers is determining when their children should move on to a refinement in the method and become confident and more efficient at written calculation.

Children should be equipped to decide when it is best to use a mental, written or calculator method based on the knowledge that they are in control of this choice as they are able to carry out all three methods with confidence.

The correct use of vocabulary and mathematical symbols will be reinforced to ensure that it is mathematically correct.

The National Curriculum September 2013

Key stage 1 – Years 1 and 2

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

YEAR 1 Addition and Subtraction

Statutory requirements

Pupils should be taught to:

- read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs
- represent and use number bonds and related subtraction facts within 20
- add and subtract one-digit and two-digit numbers to 20, including zero
- solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$.

YEAR 1 Multiplication and Division

Statutory requirements

Pupils should be taught to:

- 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.

YEAR 2 Addition and subtraction

Statutory requirements

Pupils should be taught to:

- 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
- recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- 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
- recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

YEAR 2 Multiplication and Division

Statutory requirements

Pupils should be taught to:

- recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
- show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Lower Key Stage 2 Years 3 and 4

The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

YEAR 3 Addition and Subtraction

Statutory requirements

Pupils should be taught to:

- add and subtract numbers mentally, including:
  - a three-digit number and ones
  - a three-digit number and tens
  - a three-digit number and hundreds
- add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction
- estimate the answer to a calculation and use inverse operations to check answers
- solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.

YEAR 3 Multiplication and Division

Statutory requirements

Pupils should be taught to:

- recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
- 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
- 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.

YEAR 4 Addition and Subtraction

Statutory requirements

Pupils should be taught to:

- add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- estimate and use inverse operations to check answers to a calculation
- solve addition and subtraction two-step problems in contexts, deciding which
- operations and methods to use and why

YEAR 4 Multiplication and Division

Statutory requirements

Pupils should be taught to:

- recall multiplication and division facts for multiplication tables up to 12 × 12
- 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
- multiply two-digit and three-digit numbers by a one-digit number using formal written layout
- 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.

Upper Key Stage 2 Years 5 and 6

The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

YEAR 5 Addition and Subtraction

Statutory requirements

Pupils should be taught to:

- add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
- add and subtract numbers mentally with increasingly large numbers
- use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

YEAR 5 Multiplication and Division

Statutory requirements

Pupils should be taught to:

- 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
- 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
- multiply and divide numbers mentally drawing upon known facts
- divide numbers up to 4 digits by a one-digit number using the formal written method

YEAR 5	Multiplication and Division
Statutory requirements	
of short division and interpret remainders appropriately for the context ▪ multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	
▪ recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}) ▪ solve problems involving multiplication 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.	

YEAR 6	Addition, subtraction, multiplication and division
Statutory requirements	
Pupils should be taught to: ▪ 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 long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context ▪ divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context ▪ perform mental calculations, including with mixed operations and large numbers ▪ identify common factors, common multiples and prime numbers ▪ use their knowledge of the order of operations to carry out calculations involving the four operations ▪ solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	
▪ solve problems involving addition, subtraction, multiplication and division ▪ use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.	

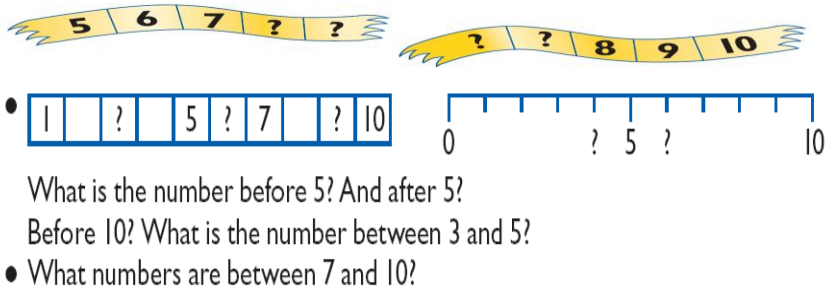
PROGRESSION THROUGH CALCULATIONS FOR ADDITION

To add successfully, children need to be able to:

- recall all addition pairs to 9 + 9 and complements in 10;
- add mentally a series of one-digit numbers, such as 5 + 8 + 4;
- add multiples of 10 (such as 60 + 70) or of 100 (such as 600 + 700) using the related addition fact, 6 + 7, and their knowledge of place value;
- partition two-digit and three-digit numbers into multiples of 100, 10 and 1 in different ways.

<table>
<tr>
<td>Previous knowledge and experience

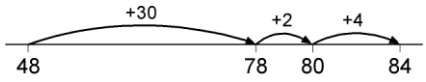
Fs and Yr1

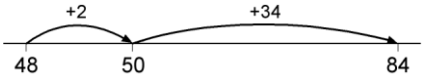
Children are encouraged to develop a mental picture of the number system in their heads to use for calculation.
They develop ways of recording using pictures etc.</td>
<td colspan="2"> 
</td>
</tr>
<tr>
<td>Phase 1:
The empty number line

•The empty number line helps to record the steps on the way to calculating the total.

Children progress to using numbered lines</td>
<td>Phase 1 Yr 1 and 2

Steps in addition can be recorded on a number line. The steps often bridge through a multiple of 10.
8 + 7 = 15
 

48 + 36 = 84
 

or:
 

This will also include the use of the 100 square to reinforce the use of partitioning.</td>
<td>Key vocabulary

Add, more, plus, sum, total, altogether, partition. Multiple of 10</td>
</tr>
</table>

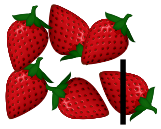
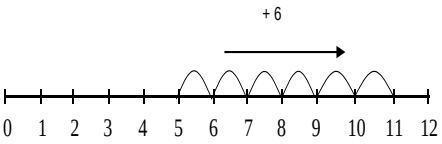
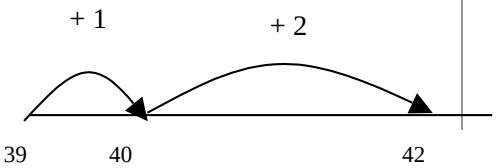
Phase 2: Partitioning • **The next stage is to record mental methods using partitioning. Add the tens and then the units to form partial sums and then add these partial sums.** • **Partitioning both numbers into tens and units mirrors the column method where units are placed under units and tens under tens. This also links to mental methods.**	Phase 2 Yr 2, 3,4 Record steps in addition using partitioning: **47 + 76 = 47 + 70 + 6 = 117 + 6 = 123** **47 + 76 = 40 + 70 + 7 + 6 = 110 + 13 = 123** Partitioned numbers are then written under one another: $47 = 40 + 7$ $+76 \quad 70 + 6$ $110 + 13 = 123$	*As above* column, addition, tens boundary .
Phase 3: Expanded method in columns • **Move on to a layout showing the addition of the tens to the tens and the units to the units separately. To find the partial sums either the tens or the units can be added first, and the total of the partial sums can be found by adding them in any order. As children gain confidence, ask them to start by adding the units digits first always.** • **The addition of the tens in the calculation 47 + 76 is described in the words 'forty plus seventy equals one hundred and ten', stressing the link to the related fact 'four plus seven equals eleven'.** • **The expanded method leads children to the more compact method so that they understand its structure and efficiency.**	Phase 3 Yr 2, 3,4 Write the numbers in columns. Adding the tens first: 47 + 76 110 13 123 **Adding the units first:** 47 + 76 13 110 123 Discuss how adding the units first gives the same answer as adding the tens first. Refine over time to adding the units digits first consistently.	*As above* Hundreds boundary, approximate

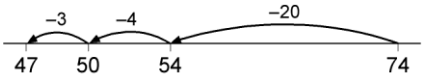
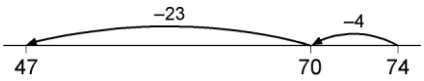
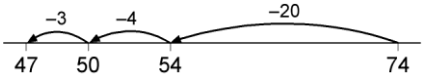
Phase 4: Column method • **In this method, recording is reduced further. Carry digits are recorded below the line, using the words 'carry ten' or 'carry one hundred', not 'carry one'.** • **Later, extend to adding three two-digit numbers, two three-digit numbers and numbers with different numbers of digits.**	Phase 4 Yr 3, 4, 5 6 47 + 76 = 123 (1 1) 258 + 87 = 345 (1 1) 366 + 458 = 824 (1 1) Column addition remains efficient when used with larger whole numbers and decimals. Once learned, the method is quick and reliable.	*As above* Carry
Phase 5: Column method expanded to decimals In this phase the standard method is expanded to include the use of decimals. Bring in decimals with money. Children learn that decimal points line up under each other especially when adding mixed amounts e.g. 3.2m + 280cm By the end of year 6 children should be able to work with 3 decimal places	Phase 5 Yr 4,5 6 **72.8** **+54.6** **127.4** 1 1 **13.86** **+ 9.481** **23.341** 1 1 1	*As above* Units boundary, tenths boundary, hundredths boundary.

PROGRESSION THROUGH CALCULATIONS FOR SUBTRACTION

To subtract successfully, children need to be able to:

- recall all addition and subtraction facts to 20;
- subtract multiples of 10 (such as 160 – 70) using the related subtraction fact,16 – 7, and their knowledge of place value;
- partition two-digit and three-digit numbers into multiples of one hundred, ten and one in different ways (e.g. partition 74 into 70 + 4 or 60 + 14).

Phase 1: Counting up Using number line	Phase 1 R Yr 1	Key vocabulary
• **Understand subtraction as 'take away'**		count on less difference
		
• **Find a 'difference' by counting up;** **I have saved 5p. The socks that I want to buy cost 11p. How much more do I need in order to buy the socks?**		
42 – 3 = 39		

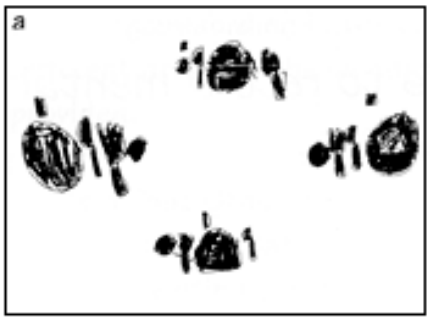
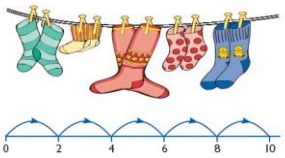
Phase 2: Using the empty number line to count back • **The empty number line helps to record or explain the steps in mental subtraction.** **Children start with steps of 1** **A calculation like 74 – 27 can be recorded by counting back 27 from 74 to reach 47. The empty number line is also a useful way of modelling processes such as bridging through a multiple of ten.** • **The steps can also be recorded by counting up from the smaller to the larger number to find the difference, for example by counting up from 27 to 74 in steps totalling 47.**	Phase 2 Yr 1, 2,3 15 – 8 = 7  74 – 47 = 27   	As above count back
Phase 3: Partitioning • **Subtraction can be recorded using partitioning to write equivalent calculations that can be carried out mentally. For** **74 – 27 this involves partitioning the 27 into 20 and 7, and then subtracting from 74 the 20 and the 4 in turn.** **Some children may need to partition the 74 into 70 + 4 or 60 + 14 to help them carry out the subtraction.**	Phase 3 Yr 3,4,5,6 Subtraction can be recorded using partitioning: 74 – 27 = 74 – 20 – 7 = 54 – 7 = 47 74 – 27 = 70 + 4 – 20 – 7 = 60 + 14 – 20 – 7 = 40 + 7 This requires children to subtract a single-digit number or a multiple of 10 from a two-digit number mentally. The method of recording links to counting back on the number line.  	subtraction, difference, minus, more than,

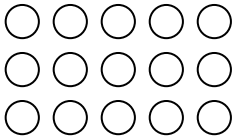
Phase 4: Expanded layout, leading to column method • **Partitioning the numbers into tens and units and writing one under the other mirrors the column method, where units are placed under units and tens under tens.** • • **The expanded method leads children to the more compact method so that they understand its structure and efficiency.** **Children should be taught that** **decimals line up underneath each other.**	Phase 4: Yr 3, 4,5,6 Partitioned numbers are then written under one another: Example: 74 − 27 $70+4$ $-\ 20+7$ $\overset{60}{\cancel{70}}+\overset{14}{\cancel{4}}$ $-\ 20+7$ $\quad 40+7$ $\overset{6}{\cancel{7}}\ \overset{14}{\cancel{4}}$ $-\ 2\ 7$ $\quad 4\ 7$ Example: 741 − 367 $700+40+1$ $-\ 300+60+7$ $\overset{600}{\cancel{700}}+\overset{130}{\cancel{40}}+\overset{11}{\cancel{1}}$ $-\ 300+60+7$ $\quad 300+70+4$ $\overset{6}{\cancel{7}}\ \overset{13}{\cancel{4}}\ \overset{11}{\cancel{1}}$ $-\ 3\ 6\ 7$ $\quad 3\ 7\ 4$ Example: 563 − 241, no adjustment or decomposition needed Expanded method leading to $500+60+3$ $-\ 200+40+1$ $\quad 300+20+2$ 563 $-\ 241$ $\quad 322$ **£8.95** **16.05** **- £4.38** **- 12.9**	exchange
Phase 5: Decomposition Children are able to use the compact method, crossing tens , hundreds boundaries and dealing with zeros Children are able to subtract decimal numbers including a 2 or 3 decimal place number from a 1 or 2 decimal place number.	Phase 5: Yr 4,5,6 **6 14 1** **754** **- 286** **468** **5 13 1** **6467** **- 2684** **3783**	decomposition

PROGRESSION THROUGH CALCULATIONS FOR MULTIPLICATION

To multiply successfully, children need to be able to:

- recall all multiplication facts to 10 × 10;
- partition numbers into multiples of one hundred, ten and one;
- work out products such as 70 × 5, 70 × 50, 700 × 5 or 700 × 50 using the related fact 7 × 5 and their knowledge of place value;
- add two or more single-digit numbers mentally;
- add multiples of 10 (such as 60 + 70) or of 100 (such as 600 + 700) using the related addition fact, 6 + 7, and their knowledge of place value;
- add combinations of whole numbers using the column method (see above).

Phase 1: Groups of objects **Children will experience equal groups of objects and will count in 2s and 10s and begin to count in 5s.** **They will work on practical problem solving activities involving equal sets or groups.**	Phase 1 R Yr 1  	groups of
Phase 2: **Repeated addition** **Children develop their understanding of multiplication** **3 times 5 is 5 + 5 + 5 = 15** **or 3 lots of 5** **or 5 x 3** **4 times 6 is 6 + 6 + 6 + 6 = 24** **or 4 lots of 6** **or 6 x 4**	Phase 2: Yr 1,2,3  2 + 2 + 2 + 2 + 2 = 10 2 × 5 = 10 2 multiplied by 5 5 pairs 5 hops of 2	times lots of repeated addition

Phase 3: Arrays **Children should be able to model a multiplication calculation using an array.** **This knowledge will support with the development of the grid method** **Children should know that 3 x 5 has the same answer as 5 x 3**	Phase 3: Yr 1,2,3  3 x 5 = 15 5 x 3 = 15	As above array
Phase 4: Partitioning **Children use mental methods of multiplying to partition numbers.** **They start to apply this to multiplying 2 digit numbers by 1 digit numbers.** **Either the tens or the units can be multiplied first. Starting with the tens is more common.** **This leads on to the grid method.**	Phase 4: Yr 3, 4 , 5 7 x 4 4 x 4 = 16 3 x 4 = 12 = 28 32 x 9 30 x 9 = 270 2 x 9 = 18 = 288	As above partition
Phase 5: Grid method **(optional)** **This method is often confusing but weaker children who may struggle to achieve L4 prefer this method.** **Placing the number with the most digits in the left hand column makes it easier to add partial products.** **It is easy to extend this method to HTU x TU**	Phase 5: Yr 4, 5, 6 38 x 7 × | 7 30 | 210 8 | 56 | 266	As above grid method partition column product

Phase 6: Expanded short multiplication **Children should describe what they do by referring to the actual values of the digits in the columns. For example, the first step in 38 × 7 is 'thirty multiplied by seven', not 'three times seven', although the relationship 3 × 7 should be stressed.** **•Most children should be able to use this expanded method for TU × U by the end of Year 4.** **Carrying should also be introduced.**	Phase 6 : Yr 4, 5, 6 $30+8$ $\times\ 7$ 210 $\quad 30\times7=210$ 56 $\quad 8\times7=\ 56$ 266 38 $\times\ 7$ 210 56 266	As above carry
Phase 7: Short multiplication **Recording is reduced further and carrying introduced.** **Multiplying decimal numbers and counting in to place the decimal point should also be introduced**	Phase 7: Yr 5, 6 38 $\times\ 7$ 266 5	
Phase 8: Expanded long multiplication **2 digit by 2 digits** **Grid method can be used** **Reduce the recording, showing the links to the grid method above** **Reduce recording further.** **The aim is for most children to use this long multiplication method for TU × TU by the end of Year 5.** **This can then be applied to HTU x TU**	Phase 8: Yr 5, 6 56 x 27 is approximately 60 x 30= 1800 56 $\times\ 27$ 1000 $\quad 50\times20=1000$ 120 $\quad 6\times20=\ 120$ 350 $\quad 50\times7=\ 350$ 42 $\quad 6\times7=\ 42$ 1512 1 56 $\times\ 27$ 1120 $\quad 56\times20$ 392 $\quad 56\times\ 7$ 1512 1	
Phase 9: Compact long multiplication **Children who are secure at Phase 8 can move on to this. Multiplying with decimals is a further extension.**	Phase 9: Yr 5, 6	

PROGRESSION THROUGH CALCULATIONS FOR DIVISION

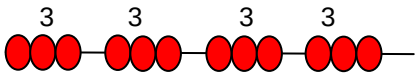
To divide successfully in their heads, children need to be able to:

- understand and use the vocabulary of division – for example in 18 ÷ 3 = 6, the 18 is the dividend, the 3 is the divisor and the 6 is the quotient;
- partition two-digit and three-digit numbers into multiples of 100, 10 and 1 in different ways;
- recall multiplication and division facts to 10 × 10, recognise multiples of one-digit numbers and divide multiples of 10 or 100 by a single-digit number using their knowledge of division facts and place value;
- know how to find a remainder working mentally – for example, find the remainder when 48 is divided by 5;
- understand and use multiplication and division as inverse operations.

To carry out written methods of division successful, children also need to be able to:

- understand division as repeated subtraction;
- estimate how many times one number divides into another – for example, how many sixes there are in 47, or how many 23s there are in 92;
- multiply a two-digit number by a single-digit number mentally;
- subtract numbers using the column method.

Phase 1: Groups of objects **Children will understand equal groups and share items out in play and problem solving. They will count in 2s and 10s and later in 5s.**	Phase 1 R Yr 1 	groups of share
Phase 2: Sharing equally **Children will develop their understanding of division and use jottings to support calculation**	Phase 2: Yr 1,2,3 **6 sweets shared between 2 people, how many do they each get** ◯ ◯ ◯ ◯ ◯ ◯ **Tom ?** **Sam ?** ▢ ▢	As above equal equally ÷

Phase 3: Repeated Subtraction Repeated subtraction using objects, a number line or beads Remainders can be introduced	Phase 3 Yr 2, 3 12 ÷ 3 = 4  	As above remainder multiple
Phase 4: Partitioning **Many children find it hard to use partitioning as their mental division skills are not secure enough.**	Phase 4: Yr 3,4,5 84 ÷ 4 = 245 ÷ 5 = 80 ÷ 4 = 20 200 ÷ 5 = 40 4 ÷ 4 = 1 40 ÷ 5 = 8 21 5 ÷ 5 = 1 49	
Phase 5: Expanded short division **Children learn to subtract multiples of the divisor from the number being divided (dividend)** **Use questions such as 'How many nines in 90?'** **As children become more confident they should look fro bigger 'chunks' or multiples in order to shorten the method.** **It is important that children estimate their answer first.**	Phase 5: Yr 3, 4, 5,6 **97 ÷ 9** $9\overline{)97}$ − 90 9×10 7 Answer: 10 R 7 196 ÷ 6 $6\overline{)196}$ − 60 6×10 136 − 60 6×10 76 − 60 6×10 16 − 12 6× 2 4 32 Answer: 32 R 4	As above divisor multiples of the divisor dividend chunking

Phase 6: Compact short division **Once children are competent at the expanded method and understand the principle of carrying, they are ready for the compact method of short division.** **Remainders as fractions should be introduced in Year 4 or 5** **Remainders as decimals should be introduced when children are ready** **This is a good phase to introduce more capable pupils to division of a decimal number.**	Phase 6: Yr 4,5,6 **196 ÷ 6** **32 r 4** **6 ⟌ 196**	As above quotient
Phase 7: Expanded Long Division **Estimating has two purposes when doing a division:** -to help to choose a starting point for the division; -to check the answer after he calculation. The next step is to tackle HTU ÷ TU, which for most children will be in Year 6. The layout on the right, which links to chunking, is in essence the 'long division' method. Recording the build-up to the quotient on the left of the calculation keeps the links with 'chunking' and reduces the errors that tend to occur with the positioning of the first digit of the quotient. **Conventionally the 20, or 2 tens, and the 3 units forming the answer are recorded above the line, as in the second recording.**	Phase 7 Yr 5,6 How many packs of 24 can we make from 560 biscuits? Start by multiplying 24 by multiples of 10 to get an estimate. As 24 × 20 = 480 and 24 × 30 = 720, we know the answer lies between 20 and 30 packs. We start by subtracting 480 from 560. 24 ⟌ 560 20 − 480 (24 × 20) 80 3 72 (24 × 3) 8 Answer: 23 R 8 In effect, the recording above is the long division method, though conventionally the digits of the answer are recorded above the line as shown below. 23 24 ⟌ 560 −480 80 −72 8 Answer: 23 R 8	estimate