Maths at Daventry Hill School

Rationale and description

We aim to give the children a secure understanding of the basic mathematical skills, a solid foundation upon which they can build as they move through their education. A good mathematical knowledge is an essential skill for everyday life, and necessary for financial literacy and most forms of employment.

In our early years and yellow pathway classrooms, maths skills are developed through activities such as matching, sorting, role play and number songs and games. When pupils are ready for the next steps, which is assessed through continuous observation and recording, they then move on to more formal learning.

We believe that all children have the potential to succeed. It is important that pupils are given the chance to deepen their conceptual understanding by tackling challenging and varied problems. Pupils learn to apply their mathematical knowledge when problem solving and are given opportunities to reason about their mathematical learning. Practical, real life activities are used wherever possible to enable pupils to relate their learning to real life contexts. Pupils are encouraged to work systematically when solving problems, identifying what they know and thinking how this can be used.

It is important that pupils do not learn calculation procedures by rote but are able to demonstrate an understanding of them through the use of concrete materials and pictorial representations. We have a coherent calculation policy that can be used by teachers to ensure pupils understand mathematical calculation and are supported to develop this incrementally.

Pupils will develop a range of mental calculation skills. They will learn to recall number facts and apply these when calculating and problem solving. Pupils will learn their times tables and can practise these using the Times Table Rockstars programme in our primary school. All children in Key Stage 2 will have a username and password to access TTRS both at home and at school. We have daily Maths Meetings in which pupils practice and embed their knowledge of mathematical facts.

Mathematical language is important and so key vocabulary are identified within lessons and explicitly taught. All pupils are encouraged to use the correct language and this is modelled by all staff. Further guidance on the agreed vocabulary used at Daventry Hill School can be found within the calculation policy.

Teachers use Rising Stars to support engaging and interesting lessons. The planning focuses on sequenced mathematical learning. Pupils learn a wide range of mathematical skills, including calculations, number, geometry, measures and statistics.

In Skills for Life (KS4) and Foundations for the Future (KS5) pupils work towards accreditation in Functional Skills Maths, starting at Entry Level 1,2 and 3, then moving on to Level one and two if appropriate. These qualifications are equivalent to GSCE Maths. Work experience in Key Stage 4 give pupils the opportunity to apply their maths skills in a real-life context.

Calculation policy

Concrete, Pictorial, Abstract Framework

Pupils can find maths difficult because it is abstract. The CPA approach builds on children's existing knowledge by introducing abstract concepts in a concrete and tangible way. It involves moving from concrete materials, to pictorial representations, to abstract symbols and problems.

Concrete	The doing stage Pupils use concrete objects to model problems Allow pupils to experience and handle physical (concrete) objects All abstract concepts should first be introduced using physical, interactive concrete materials
Pictorial	The seeing stage Visual representations of concrete objects are used to model problems. This encourages pupils to make a mental connection between the physical object they just handled and the abstract pictures, diagrams or models that represent the objects from the problem. This helps pupils visualise abstract problems
Abstract	The symbolic stage Pupils will not move to this stage until they have demonstrated that they have a solid understanding of the concrete and pictorial stages of the problem. Pupils are shown a concept at a symbolic level, using only numbers, notation and mathematical symbols.

Key vocabulary (incorrect language is in red)

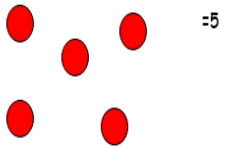
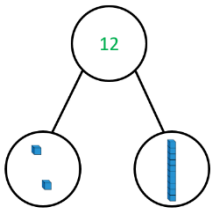
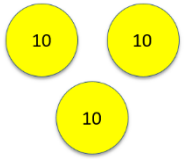
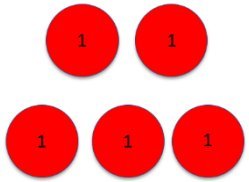
Number	Ones not 'Units'	Zero not 'Oh'
	Place value	
Calculation	Whole / part	Known / unknown
	Is equal to (is the same as) not just 'equals'	Calculation / equation not 'sum' or 'number sentence'
Addition	Total	Plus
	Altogether	more
	Add	And
	Make	Sum/sum of
	score	Double
	Count on	Bigger/larger
	Partition	Compensation
Subtraction	Take away	Exchange / exchanging / regrouping not 'stealing/borrowing'
	Less than	The difference
	subtract	minus
	fewer	Decrease
Multiplication	Double	Times
	Multiplied by	The product of
	Groups of	Lots of
	Equal groups	Repeated addition
	Array	Factor
Division	Share	Group
	Divide	Divided by
	Half	
Shape	Rhombus / parallelogram not 'diamond'	

Number

Pupils will learn to count before they learn to write numbers.

They will learn from early on that there are specific words they can say when counting. This does not mean they know what they mean. It is important to first establish one-to-one correspondence before moving on.

One to one correspondence	This is the ability to match one object or number word to another (correspondence), the understanding that the number word they are saying has a meaning.
Place value	This is the ability to recognise the value of any digit in any given number according to its place in that number This is needed before a pupil moves onto addition and subtraction
counting	Pupils will first need to be able to count in ones proficiently. They can then move to counting in steps of 2, 5, 10. Use practical objects such as cubes, Numicon first. They can then move to counting in jumps along a number line

One-to-one correspondence / Counting	Pupils will be learning how to count objects and write the correct number next to them.   =5 This can be done with a variety of concrete resources and in real life contexts
Representing number	 Use physical resoucrces to show the value of a number. This could be cubes or dienes blocks.   Use place value counters to represent numbers.

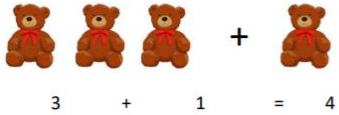
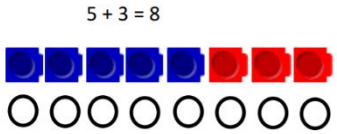
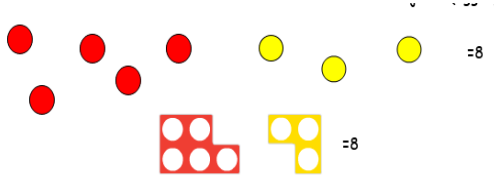
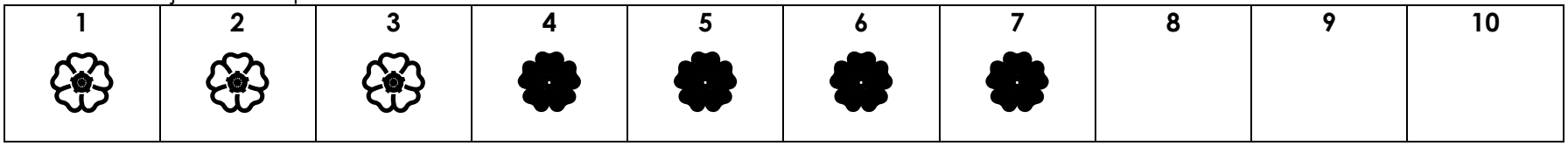
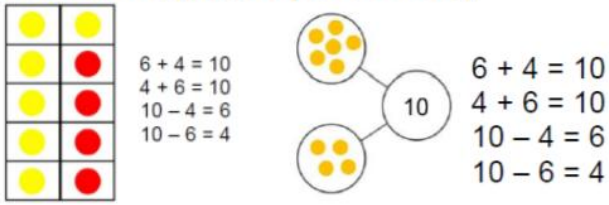
	Encourage children to represent numbers in a variety of different ways. Only move to hundreds once they are secure with tens.

Addition

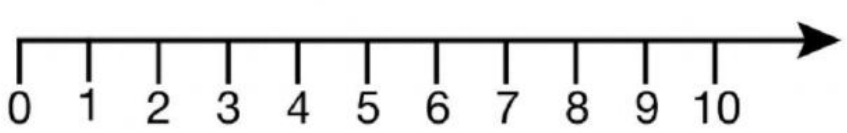
The strategies can first be used to ensure pupils can count in order. Then they can be used to develop addition.

Progression of strategies

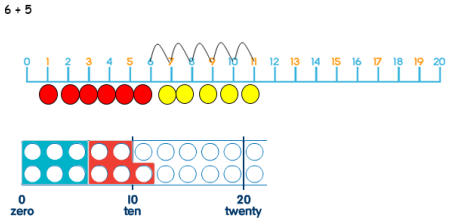
1. Practical based activities
2. Number tracks
3. Numbered lines and 100 squares
4. Partially numbered lines
5. Empty number lines
6. Compensation (use where appropriate i.e. for numbers near a multiple of 10)
7. Partitioning, vertical partitioning
8. Written method – expanded
9. Written method – compact

Practical based activities	Pupils will learn to combine and count two sets of objects (aggregation)    Then they will learn to add on to an existing set (augmentation). This means that they will start from 5 and count 3 more to 8.
Number tracks, tens frames, Part-part whole	Count out objects and place them on a number track.  **(Ten frames / part-part whole)** 

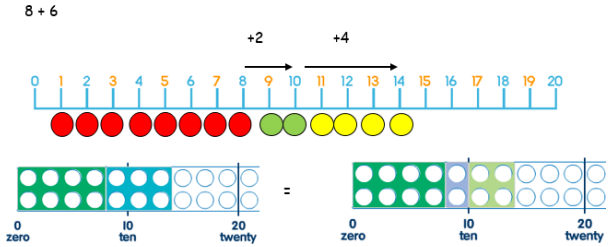
Number lines



These could be small or could be larger which pupils can physically move/jump along.



They can still use objects such as counters or Numicon to support.



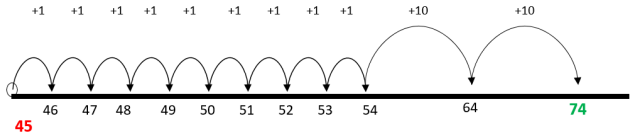
Pupils can be encouraged to use their knowledge of number bonds to help partition numbers and use this to add. i.e. they can partition one of the numbers to make up to the nearest 10.

Once pupils understand and can successfully use numbered lines, they can move to <u>partially numbered lines</u>
The number line models the counting on that children may be doing in their heads. It supports their thinking.

~~29 + 45 =~~ 45 + 29 = 74

Progression:

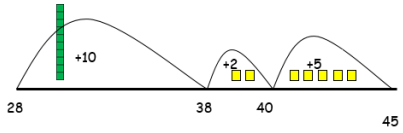
1. Number line drawn with the first number written on the line.
2. Children draw own number line.

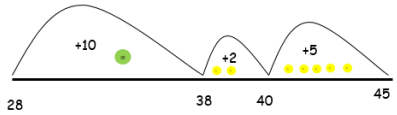


- Add the units / least significant digit first.
- Always write the amounts you have **added on** top of the number line with the symbol.
- Always write the number you have reached under the line.

And then they can move to <u>empty number lines</u>

This can still be done with objects to support

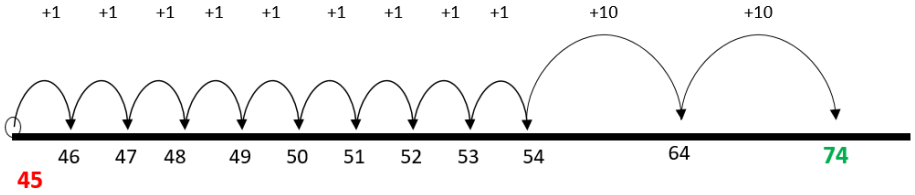




~~29 + 45 =~~ **45 + 29 = 74**

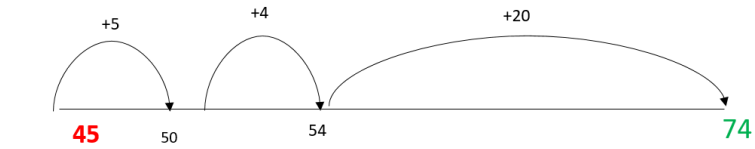
Progression:

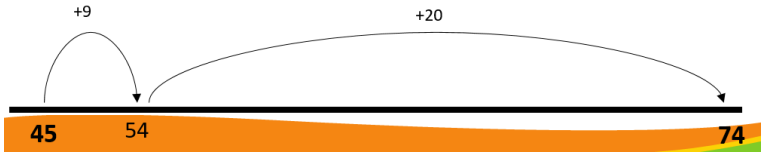
1. Number line drawn with the first number written on the line.
2. Children draw own number line.



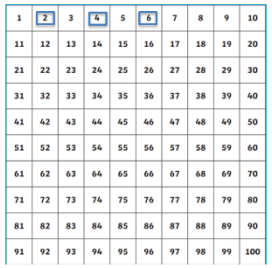
- Add the units / least significant digit first.
- Always write the amounts you have **added on** top of the number line with the symbol.
- Always write the number you have reached under the line.

~~29 + 45 =~~ **45 + 29 = 74**





100 squares

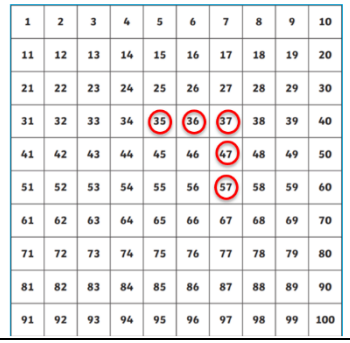
<table>
<tr>
<td></td>
<td>


Use a number square. Pupils can colour in patterns of numbers

Use the 100 square to add two digit numbers up to 100.

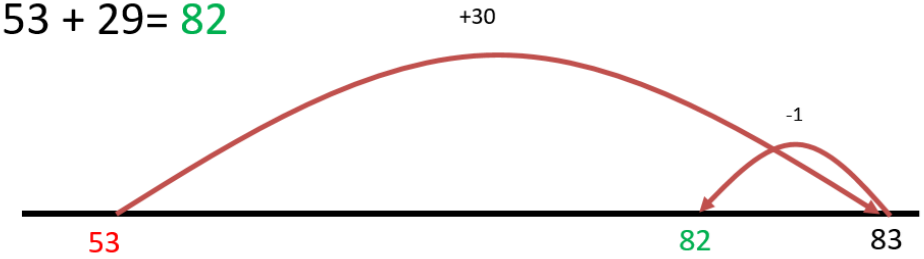
35 + 22 = 57

Find the first number then count along to add ones.
Next count down the column to add tens.



Using the number line to add two numbers. This allows pupis to see the sequence of numbers and identify patterns.
</td>
</tr>
<tr>
<td>Compensation</td>
<td>
• Add too much and take back

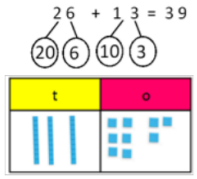
53 + 29= 82



(53+30) -1 = 82

• With this method of adding on a number line , always go from left to right and then back to the left.
• ONLY use this method if appropriate, i.e. what you are adding is near a multiple of 10. NOT a progressive stage.
• Use practical equipment to aid understanding of what happens.
</td>
</tr>
<tr>
<td>Partitioning</td>
<td>This is a concrete way of moving twoards a formal written method. It encourges the considertion of place value.</td>
</tr>
</table>

Without exchanging

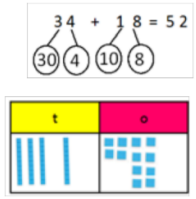


6 + 3 = 9
20 + 10 = 30

30 + 9 = **39**

(children must be taught to always start with the ones)

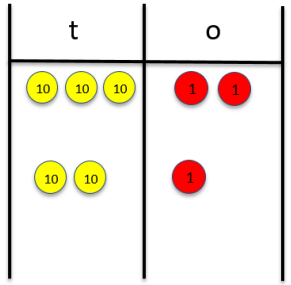
With exchanging



4 + 8 = 12
30 + 10 = 40

40 + 12 = **52**

32 + 21 = 53



This technique can be used for larger numbers

To start with, give pupils numbers that do not cross the tens boundary e.g. 25+38.
Once they become confident they can use this method to cross tens boundaries and with numbers of any size.
This method utilises mental maths skills. Pupils need good place value knowleldge first.

Both numbers:

45 + 29 = ***74***

5 + 9 = 14
40 + 20 = 60
60 + 14 = **74**

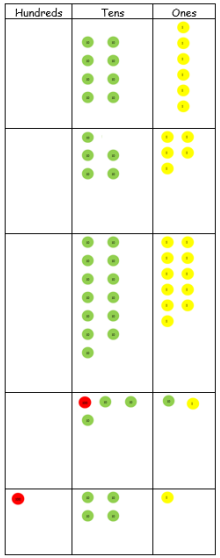
Keep the workings horizontal across the page
Keep the numbers in place value columns
Add the least signifcant digit first.

<u>Vertical partitioning</u> is the first step towards formal written methods. Pupils need to be confident recording their number using columns before using this method

32 + 26 = 30 + 2
<u>20 + 6</u>
<u>50 + 8</u> = **58**

.
Keep all of the workings on the right hand side
Keep the numbers in place value columns

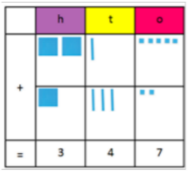
Written method – expanded	473 + 358 11 3 + 8 120 70 + 50 700 400 + 300 831 Keep the workings on the right hand side Keep the numbers in place value columns Add the least signifcant digit first
Written method – compact	473 + 358 = 831 473 + 358 831 1 1 Keep the workings on the right hand side Keep the numbers in place vaue columns Add the least sigifcant digit first Carry underneath the line If pupils are struggling with carrying, they can use objects to help with the concept. 86 + 55



	H	T	U
		8	6
+		5	5
		1	1
	1	3	0
	1	4	1

Without exchanging

	h	t	o
	2	1	5
+	1	3	2
	3	4	7



With exchanging

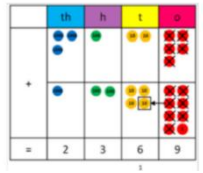
	h	t	o
	2	8	7
+	1	0	5
	3	9	2

Without exchanging

	th	h	t	o
	2	4	3	7
+		3	4	2
	2	7	7	9

With exchanging

	th	h	t	o
	3	1	2	5
+	1	2	3	6
	4	3	6	1



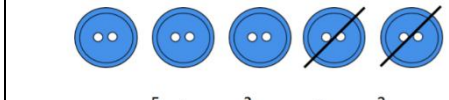
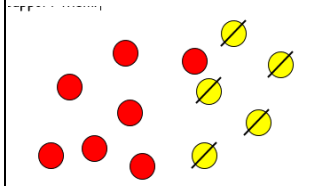
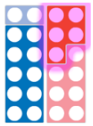
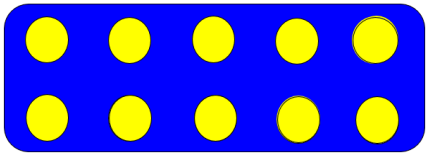
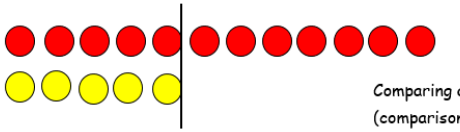
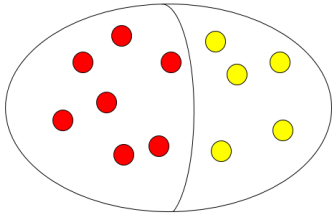
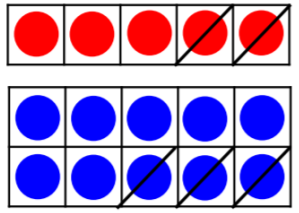
Subtraction

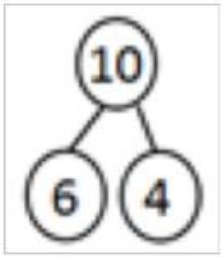
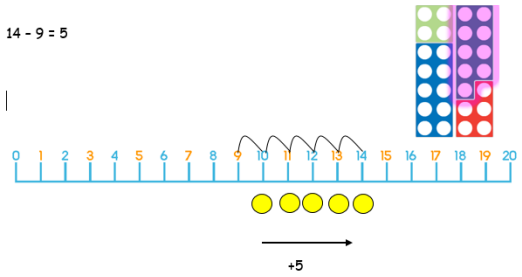
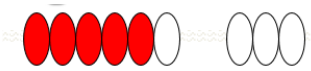
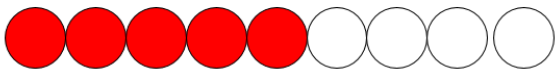
Progression of strategies

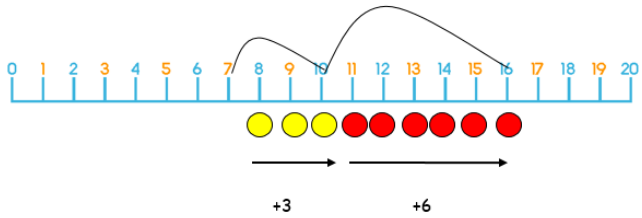
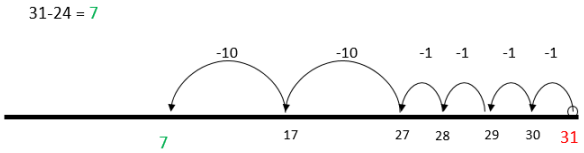
1. Practical based activities (counters, Numicon, Dienes)
2. Number tracks
3. Numbered lines
4. Bead Strings
5. Partially numbered lines
6. Empty number lines
7. Subtraction - Compensation
8. Vertical layout – counting on
9. Decomposition - expanded
10. Decomposition – compact

To start with you must always count backwards/move backwards with subtraction so as not to confuse.

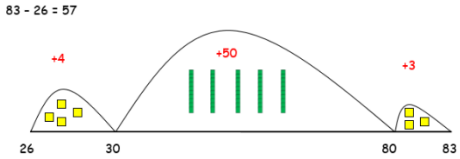
Once they are secure, you can demonstrate how the same answer can be achieved from counting backwards and counting on. If a pupil grasps this then they may choose to switch between counting backwards and counting on when completing subtractions

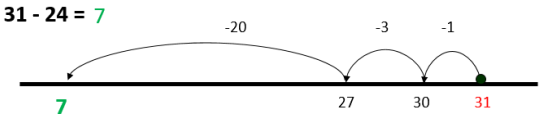
Practical based activities	Use different objects or toys. This will need to start with the real objects (concrete) but can move to pictorial representations if they can manage.  5 - 2 = 3 It is important that when using objects, you keep the subtracted items still in sight.  Removing items from a set (reduction or take-away) 12 - 5 = 7   10 - 3 = 7 but this also shows 7 + 3 = 10 Use a range of objects: cars, counters, Numicon, shells or anything that is motivating to the children. etc  Comparing a set of objects (comparison or difference) – This helps children understanding the inverse and commutative nature of Mathematics.  Seeing a set of numbers as being partitioned. This helps children manipulate numbers. 
Number tracks, tens frames, part-whole	Number tracks

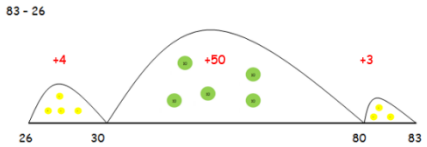
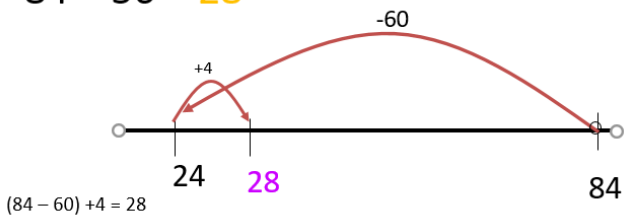
	8 – 3 = 5  • Child to count out and place (8) objects on the number track. • Always move from right to left using the **counting back** method for **subtraction**. (Take objects away from right to left) • Objects subtracted should be kept in view. Part-whole circles and apparatus  10 – 4 = 6 
Numbered lines	Counting backwards one number at a time. Always start with the largest number first. Always move from right to left using the counting back method for subtraction.  Counters can be used to add a concrete element to this. Or you can use a number line that is drawn on, or the pupil can physically move themselves along it if it is big enough.
Bead Strings (to support the move from counting back	9-3 = 6  All the beads are always in view.  Make close links to addition (e.g. 6 + 3 = 9). The 6 remaining beads do not need to be individually counted as it is obvious there are 5 and 1 more.

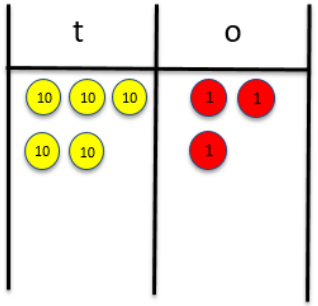
in ones and towards counting in chunks)	Count backwards in chunks to the nearest 10, partition the number they are subtracting to know how much more. 16-9=7  This can then progress onto partially numbered lines **8 – 3 = 5** • Always start with the largest number first if counting back. (Always move from right to left) • Always start with the smallest number if counting on. (Always move from left to right)  And then empty number lines – this can be supported with concrete objects or not.  Always move left when using the counting back method to subtract Always write the amounts you have subtracted on the top of the number line with the symbol '-' Always write the number you have reached under the line.

<table>
<tr>
<td></td>
<td>partitioning can be used, knowledge of place value and number bonds to subtract in chunks on the empty number line

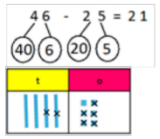
 

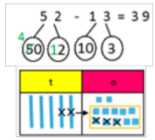



</td>
</tr>
<tr>
<td>Subtraction – compensation</td>
<td>Use a number line to take too much and then add some back
84 – 56 = 28
 

With this method of subtracting always go from right to left and then back to the right.
ONLY use this method if appropriate i.e. what you are subtracting is near a multiple of 10.
This is not a progressive stage of subtraction development
You can use practical equipment to aid the understanding of what happens.</td>
</tr>
<tr>
<td>Practical column subtraction using partitioning</td>
<td>53 - 21 = 32
 

this can be used for large numbers

Without exchanging
 

6 – 5 = 1
40 – 20 = 20
20 + 1 = 21
(children must be taught to always start with the ones)
With exchanging
 

12 – 3 = 9
40 – 10 = 30
30 + 9 = 39
(children make the greatest number and subtract the smallest number)
NB Children will use the part-part whole circles to partition into tens and ones and investigate how numbers can be regrouped.</td>
</tr>
</table>

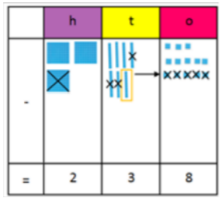
Vertical layout – counting on	This method can only be used if they have grasped the idea that the same answer can be obtained from counting on as counting backward. This would have been supported with number lines first Count up from 77 to 542 542 − 77 3 → To make 80 20 → To make 100 400 → To make 500 42 → To make 542 465 This is the same concept as used on number lines by counting in chunks to the nearest multiple of 10 but instead of writing the jumps on the top of a number line they are recorded in vertical columns (it is important to maintain place value)
Decomposition – expanded	This can be used to support subtraction when exchange needs to happen It shows why they need to exchange tens for units. 57 - 28 = 29 50 + 7 Same as 40 + 17 − 20 + 8 − 20 + 8 20 + 9 = 29 40 10+ ~~50~~ + 7 − 20 + 8 20 + 9 = 29 Write horizontally across the page Keep the numbers in the place value columns Partitioning the numbers This can be carried out practically to show that when the large number is partitioned in different ways it does not change the value of the number.
Decomposition – compact	Pupils should not be rushed to this stage. They must understand the reason behind the method by using the earlier strategies else there is a risk they only learn a process rather than subtraction itself. 4 ~~5~~ 1 7 − 2 8 2 9 Keep the numbers in place value columns Always subtract the least significant digit first This can still be supported by concrete equipment

Without exchanging

	h	t	o
	4	5	6
-	1	3	1
	3	2	5

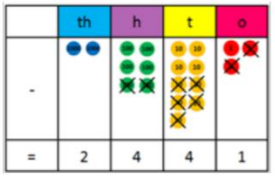
With exchanging

	h	t	o
	3	~~7~~ 6	13
-	1	3	5
	2	3	8



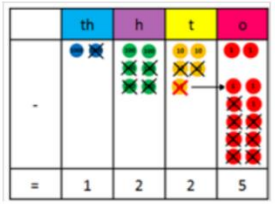
Without exchanging (crossing out)

	th	h	t	o
	2	6	9	3
-		2	5	2
	2	4	4	1



With exchanging

	th	h	t	o
	2	6	~~5~~ 4	12
-	1	4	2	7
	1	2	2	5



Multiplication

Progression of strategies

1. Practical based activities 'groups of' / repeated addition
2. Repeat addition – drawing, number line, digits
3. Arrays – practical / own drawings
4. Partitioning - informal recording
5. Grid method
6. Expanded short multiplication
7. Short multiplication
8. Multiplying decimals
9. Long multiplication

Pupils should be able to count proficiently before using multiplication.

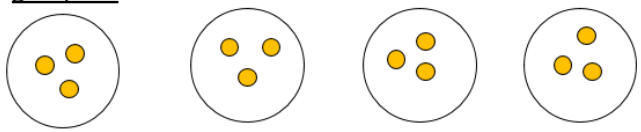
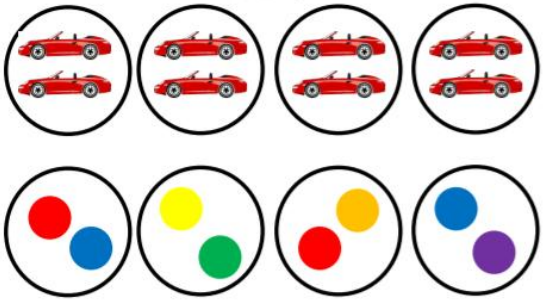
It can start by practising counting in steps of 2, 5 and 10, using practical objects. They can then move to counting in jumps along a number line, while explaining they are adding in 2's, 5's or 10's.

The National Curriculum states that all pupils should know all of their times tables by the end of year 4

Only if children are cognitively at this level and have a strong understanding of multiplication and division, should you start t introduce the other times tables.

<table>
<tr>
<td>Practical based activities ‘groups of’ / repeated addition</td>
<td>
4 x 3 = 12

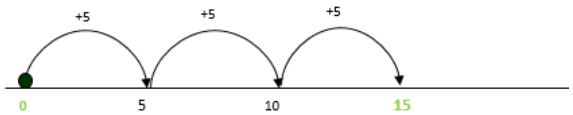
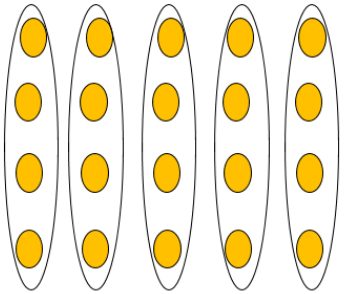
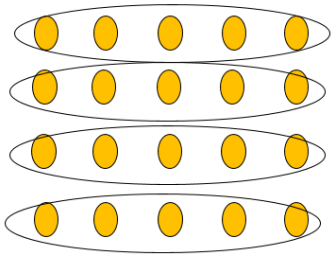
4 lots of 3 = 12

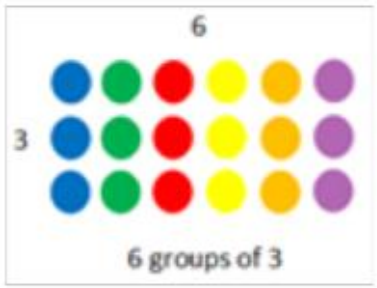
4 groups of 3 = 12

Use a variety of practical resources to work with
There needs to be emphasis place on groups of / lots of
At this point do not swap the digits around in the multiplication
4 x 2 = 8

</td>
</tr>
<tr>
<td>Repeat addition</td>
<td>
you should use the resources that are appropriate for the pupils level, think about whether they would prefer practical resources or can manage a visual representation

Can you double the amount of spots on the ladybird?

How many wheels are there altogether?

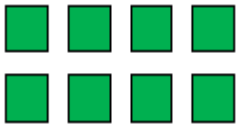
</td>
</tr>
</table>

	3 x 5 = 15 **a) Addition in digits**: (draw)  5 + 5 + 5 = 15 **b) Number Line:**  **c) Addition in digits - grouping:** 5, 10, 15
Arrays	**5 x 4 = 20**  The array lends itself to look at whether the order of the numbers makes a difference i.e. is this 5x4 or 4x5 – does it make a difference. Pupils should be secure in understanding what multiplication means before this Pupils may start seeing the link between x and ÷ (inverse) 4 x 5= 20 

<table>
<tr>
<td></td>
<td>


This can be done with coloured counters/pictures to help show the groups

Give them an array and ask them to identify how many multiplication calculations they can make from it


4 x 2 = 8
2 x 4 = 8

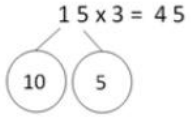
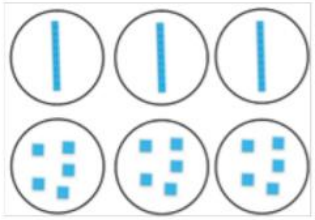
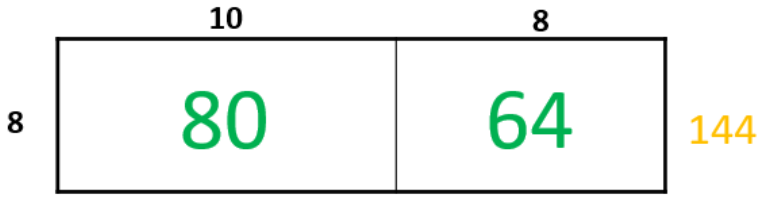
You can also then get them to think about how we could use this for the inverse (division)

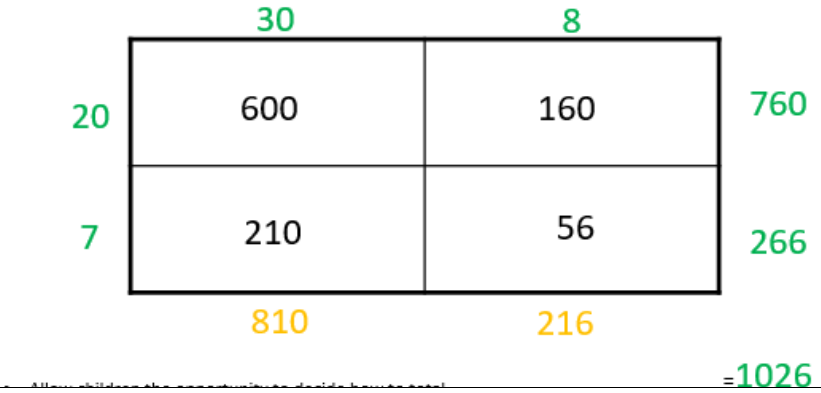
8 ÷ 4 = 2
8 ÷ 2 = 4
</td>
</tr>
<tr>
<td>Partitioning (distributive law)</td>
<td>
7 x 4 = 28

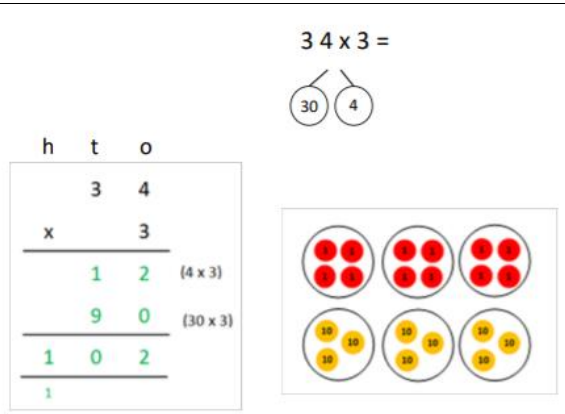
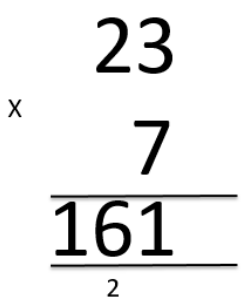
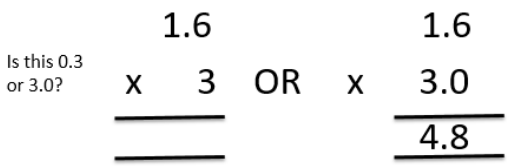
5 x 4 = 20
2 x 4 = 8

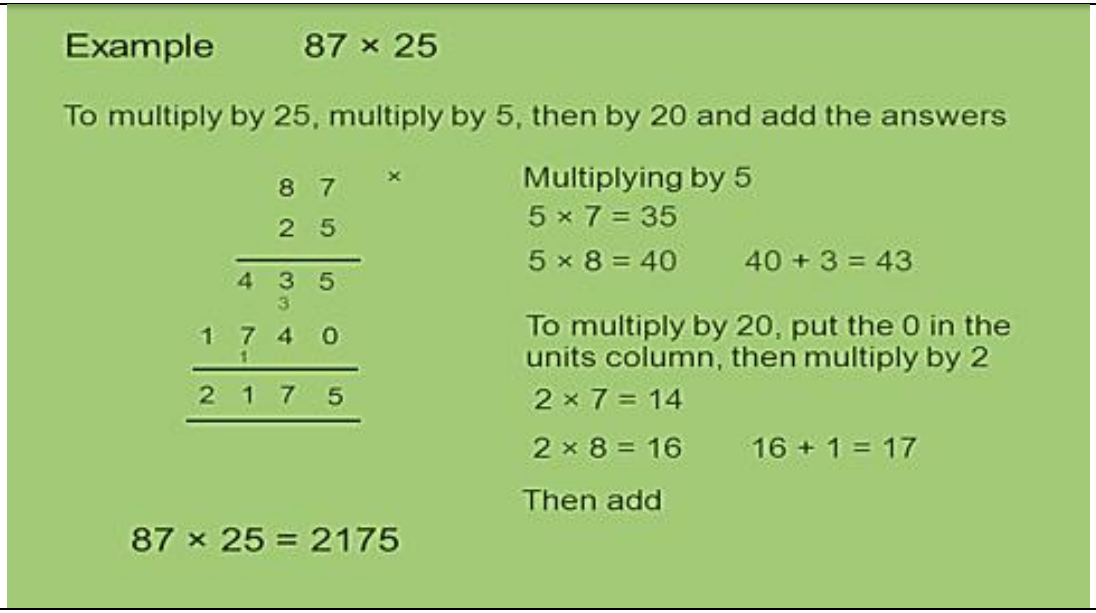
This uses and expands upon knowledge of simple times tables
e.g. if they are asked to work out 7x4 they could use the fact that they know 5x4 and 2x4 – they can add these number facts to get 7x4

the same process can be used to multiply larger numbers
</td>
</tr>
</table>

	43 x 6 = 258 each step must be written vertically underneath each other before they can access this method, they must be secure with place value 3 x 6 = 18 40 x 6 = 240 240 + 18 = 258   Equipment can be used to help visualise the partitioning 10 x 3 = 30 5 x 3 = 15 
Grid method	18 x 8 = 144  You may start by drawing the grid for them as this could distract them from the methodology. Once they are secure they can progress to drawing the grid themselves You need to explain that the numbers in each box need to be added together at the right of the grid (yellow) Once they are secure with single-digit multiplied by two-digit they can progress to two-digit multiplied by two-digit

	38 x 27 = 1026  Allow the pupils the opportunity to decide how to total the numbers, either vertically or horizontally. Be prepared for them to make errors in totalling all 4 numbers – think about getting them to estimate to help with checking.
Expanded short multiplication	23 x 7 21 (3 x 7) 140 (20 x 7) 161 Be consistent in where the operation symbol is placed. Place it on the left. Always ensure they write the symbol The workings are then written on the right in brackets This method partitions the numbers, similarly to the grid method but it is recorded vertically. They must remember to maintain place value and keep digits in the correct columns Use the real value of numbers when saying it i.e. don't say 7x2 - it is 7x20. This method should first be used with digits where no carrying is required. Once pupils have grasped the method, then they can also be introduced to numbers that would require carrying Equipment can be used to help the understanding of what is happening

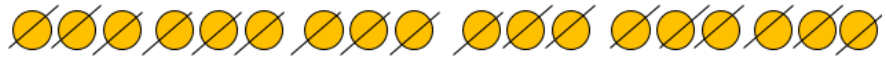
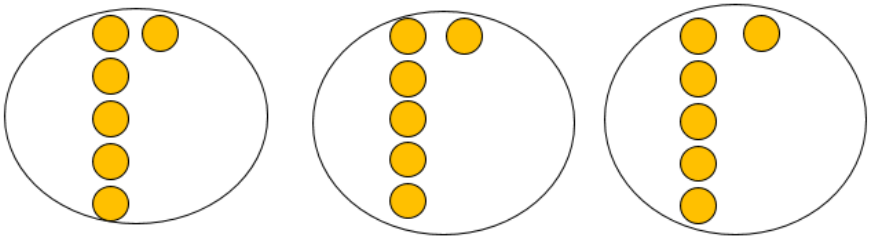
	 Do not move from using this method with single and two-digit multiplication straight to using it with two two-digit numbers. Revisit the grid method with two two-digit numbers first to revise understanding.
Short multiplication	 ensure the symbol is always written on the left the carrying into the tens column is always written underneath the line ensure that the carried numbers are accurately recorded in the correct column (maintain place value)
Multiplying decimals	 Ensure the digits are kept in the correct column in order to maintain place value.

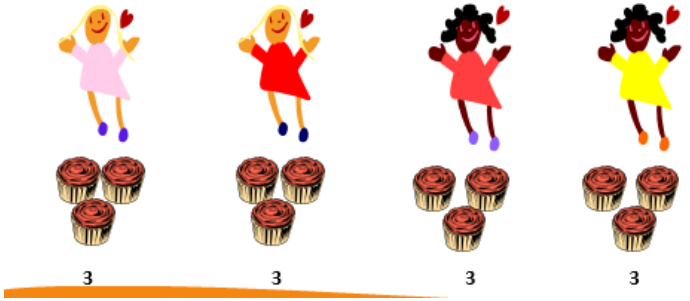
Long multiplication	

Division

Progression of strategies

1. Sharing – practical based activities
2. Sharing – recording
3. Grouping – practical based
4. Grouping – jottings and recordings
5. Grouping on a number line – repeated subtraction
6. Counting back – subtracting group of
7. Counting on – adding groups of
8. Chunking on a number line – counting back – on top of a number line
9. Chunking on a number line – counting on – on top of a number line
10. Chunking vertically
11. Long division
12. Short division

Sharing – practical based	**There are three children and 12 cakes. How many will they each have, if I share them out equally?**  **12 ÷ 3 = 4** • Practically share different pictures and objects into piles and see how many there are in each pile /group.  Dividing by practically halving an amount. 	
Sharing – recording	Sharing - recording **18 ÷ 3 = 6**  	pupils to draw the numbers of groups that they are sharing between (3) and the total number of things to share (18), before sharing them out Cross out each as they draw it in a group/give it to a child etc. Progress to not needing to draw out the total number, but keeping count as they are shared out.

<table>
<tr>
<td>Grouping – practical based</td>
<td>
There are 12 cakes.
How many children will have three cakes each?
Group in 3s


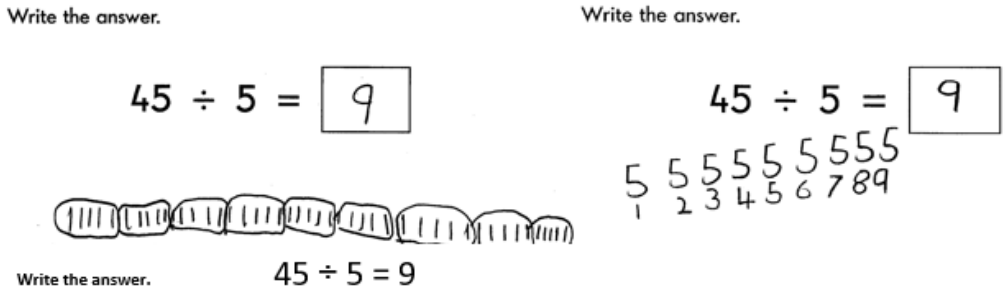
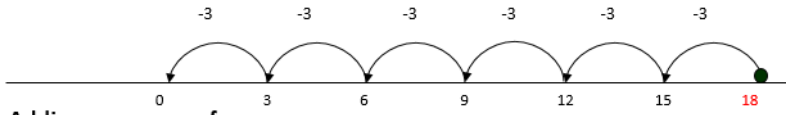
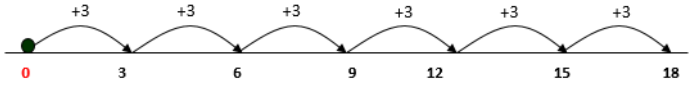
Grouping
Begin to use visual and concrete arrays and 'sets of' objects to find the answers to 'How many towers of 3 can I make with 12 cubes?'

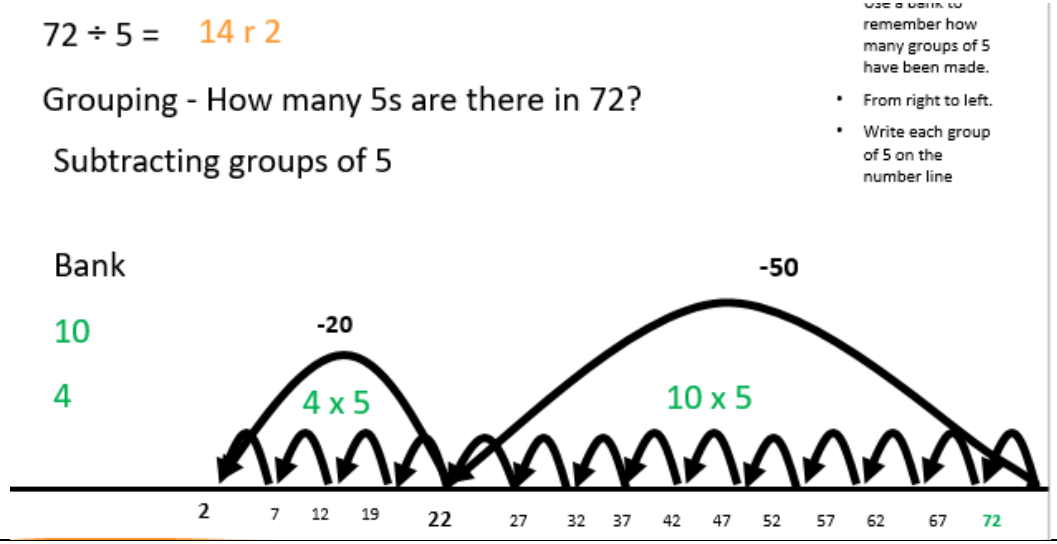
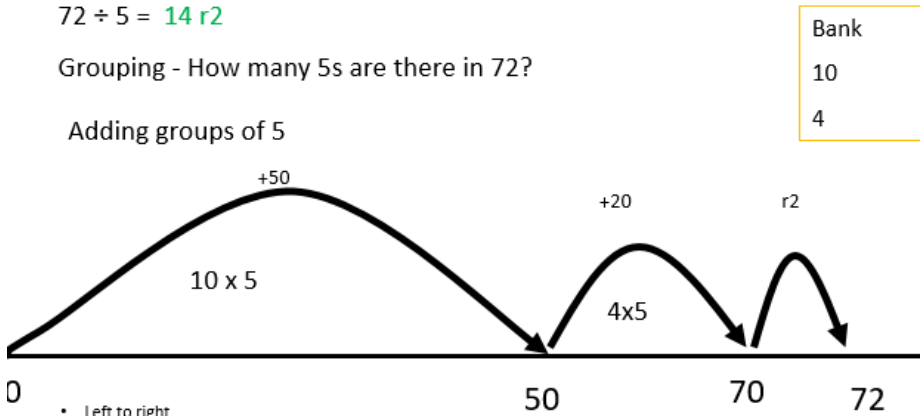
</td>
<td>it is important you that allow pupils to practically carry this out first allow them to practically group 3 cakes at a time until they run out.
'How many groups are there?'</td>
</tr>
<tr>
<td>Groupings – jottings and recordings</td>
<td>
18÷3=
a.

b.

Colour can be used to support
</td>
<td>Pupils to draw the total number (18)
Ask them to circle groups of 3

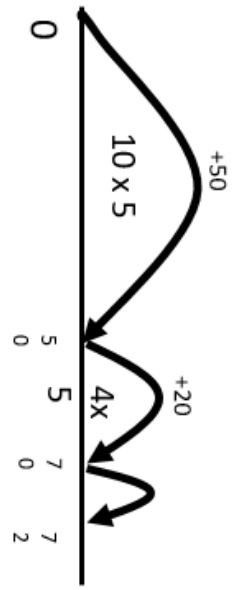
They then progress onto drawing 'groups of' until they reach the total</td>
</tr>
</table>

	Sharing  Grouping  Pupils should be encouraged to use jottings as well, to check answers to calculations that have been reached by mental methods  5, 10, 15, 20, 25, 30, 35, 40, 45 = 9 groups
Grouping on a number line – repeated subtraction / addition	18 ÷ 3 = 6 **Subtracting groups of…**  **Adding up groups of …**  	Teach ‘subtracting groups of’ first. – counting back. Always go from left to right Start with the large number and subtract back in groups of the appropriate size until you reach zero. They can then count the number of groups they have subtracted Teach ‘adding groups of’ as an alternative - counting on. This should be done if the pupils are finding counting back too difficult. If you are using counting on you must go from left to right.

Chunking on a number line – counting back	Rather than subtract one group at a time, pupils can chunk the groups together into known facts to make it quicker. To monitor how many groups have been subtracted they should be encouraged to keep a 'bank'  always move from right to left if using a counting back method write each group (of 5) on the number line the advantage of this method is that the remainder is easy to see. Pupils may be happy with this method and may not need to move to the formal long or short division
Chunking on a number line – counting on	The same concept as above can be used but with counting on, moving from left to right 

<table>
<tr>
<td>Chunking vertically</td>
<td>
72 ÷ 5 = 14 r2

72
- 50 (10 x 5)
22
20 (4 x 5)



always record the operation symbol on the left of vertical methodologies, workings are then recorded on the right
keep numbers in the correct place value columns
it is possible to use a vertical number line alongside this method to support students
chunk in multiples of 10 first as this should be a known fact
</td>
</tr>
<tr>
<td>Long division</td>
<td>
972 ÷ 36 = 27

Always right the operation symbol on the left and the workings on the right in brackets
Keep numbers in the correct place value columns

972
- 720 (20 x 36)
252
-180 (5 x 36)
72
- 72 (2 x 36)
0
</td>
</tr>
<tr>
<td>Short division</td>
<td>To support the short division method (bus stop) partitioning is used – you can demonstrate how this works</td>
</tr>
</table>

$81 \div 3 = (60 + 21) \div 3$

$= (60 \div 3) + (21 \div 3)$

$= 20 + 7$

$= 27$

short division

- A precedes B

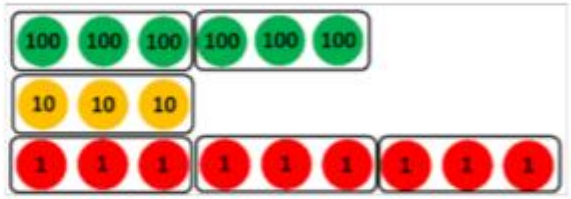
a) $\begin{array}{r} 20 + 7 \\ 3 \overline{)60 + 21} \end{array}$

b) $\begin{array}{r} 2\ 7 \\ 3 \overline{)8\ {}^{2}1} \end{array}$

Short division of 2-digit and 3-digit number by single digit numbers.

Without regrouping

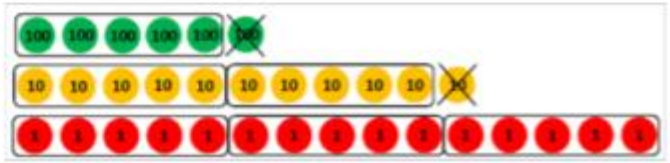
	2	1	3
3	6	3	9



(ensure are children are grouping not sharing)

With regrouping

	1	2	3
5	6	1 (1)	5

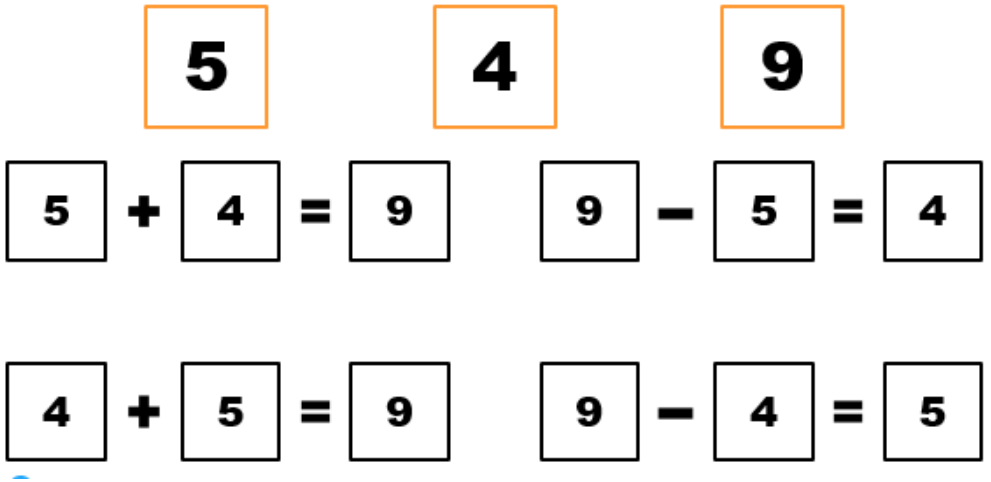


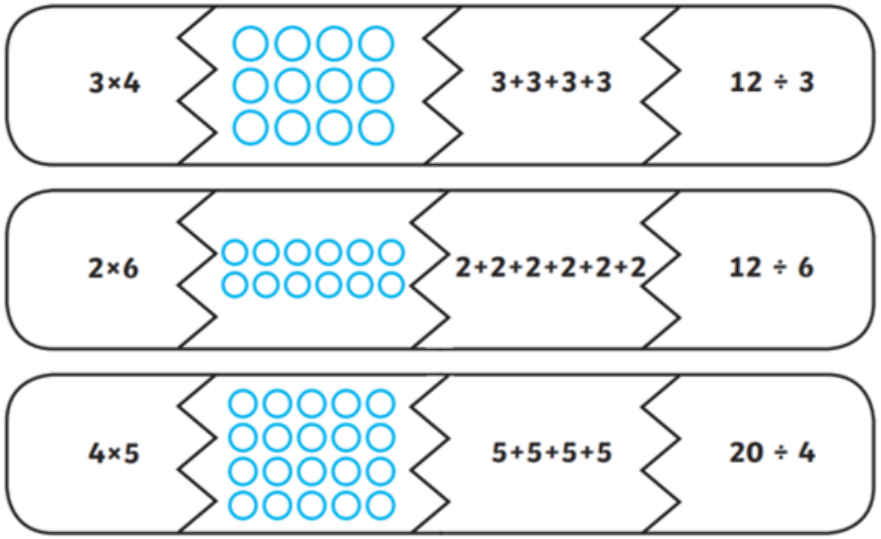
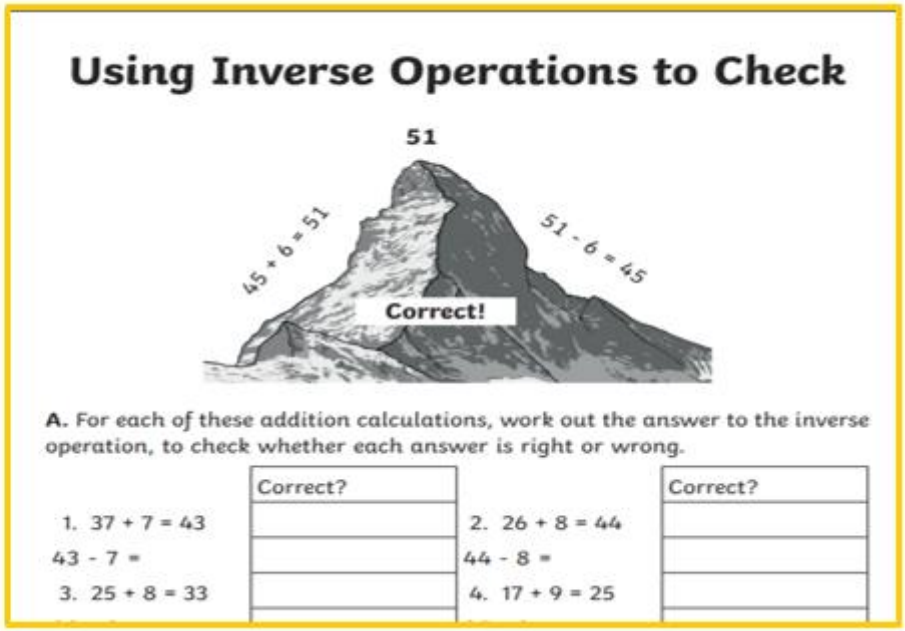
Inverse

Inverse is the opposite or reverse of something

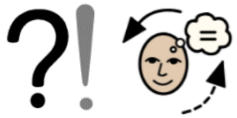
In maths, the opposite of addition is subtraction. The opposite of multiplication is division

Understanding and applying this can help pupils calculate

Addition and subtraction examples	Create 2 addition and 2 subtraction calculations from these numbers 

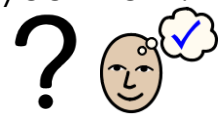
Multiplication and division examples	
Using inverse	Once children have become familiar with inverse, they can use it to check calculations. By reversing the operation they can check whether a given number sentence is correct. 

Problem Solving



What is the problem asking?

What information do you know?



What information do you need?

What strategy will you use?