

Our Mission Statement

'Growing in Love in the Spirit of Christ for the benefit of all.

At St. Joseph's, we believe a clear progression in calculation will support the teaching and learning of mathematics throughout the school. This policy contains the key procedures that will be taught within St. Joseph's. Through our daily maths lessons, we hope to give the children the knowledge and skills to tackle everyday problems with resilience and confidence.

We use the White Rose Hub's approach to the teaching of mathematics whereby children are taught maths through the development of fluency, reasoning and problem solving. We aim to provide children with the opportunity to develop their understanding through a 'Concrete, Pictorial, Abstract' approach to aid progression in calculation.

Concrete	Using concrete objects and manipulatives to help aid understanding.
Pictorial	Using pictorial representations to help children to reason and problem solve.
Abstract	Once confident in the use of concrete and pictorial representations, children move on to abstract approaches.

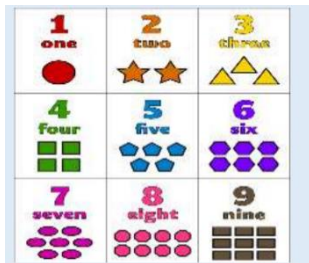
On the following pages you will find St Joseph's progressive calculation policy which incorporates the CPA approach. Our calculation policy ensures clear progression in the teaching of the four operations.

EYFS Addition

Early learning goals:

- Count reliably with numbers from 1 to 20, place them in order.
- Say which number is one more than a given number.
- Using quantities and objects, they add two single-digit numbers and count on to find the answer.

Recognise numbers up to 20 and understand the meaning of each number by recognising and knowing their clusters

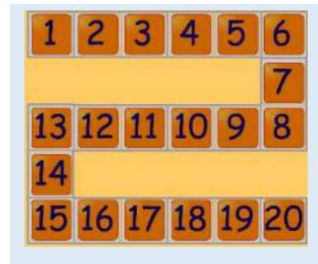


Numicon introduced to:

- identify 1 more/less
- combine pieces to add
- find number bonds
- add



Count on in ones and say which number is one more than a given number using a number line or number track to 20.



Number tracks can be introduced to count up on

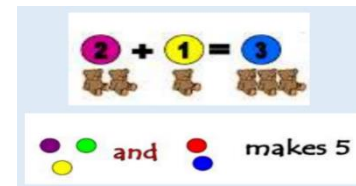
and to find one more:

What is 1 more than 4?



1 more than 13?

Begin to relate addition to combining two groups of objects using practical resources, role play, stories and songs.



Children can begin to combine groups of objects using concrete apparatus:



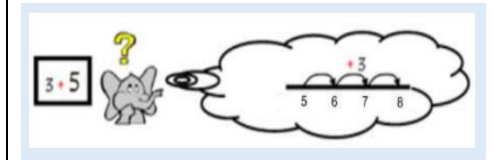
Construct number sentences verbally or using cards to go with practical activities.

Children are encouraged to read number sentences aloud in different ways:

- "Three add two equals 5"
- "5 is equal to three and two"
- "5 is the same as three and two"

Children make a record in pictures, words or symbols of addition activities.

Know that counting on is a strategy for addition. Use numbered number lines to 20.



EYFS Subtraction

Early learning goals:

- Say which number is one less than a given number.
- Using quantities and objects, they subtract two single-digit numbers and count back to find the answer.

Say which number is one less than a given number using a number line or number track to 20.

Begin to count backwards in familiar contexts such as number rhymes or stories.

Begin to relate subtraction to 'taking away' using concrete objects and role play.

Count backwards along a number line to 'take away'

Number tracks can be introduced to count back and to find one less:
What is 1 less than 9?
1 less than 20?



Children make a record in pictures, words or symbols of subtraction activities.



Concrete apparatus is used to relate subtraction to taking away and counting how many objects are left. Concrete apparatus models the subtraction of 2 objects from a set of 5.

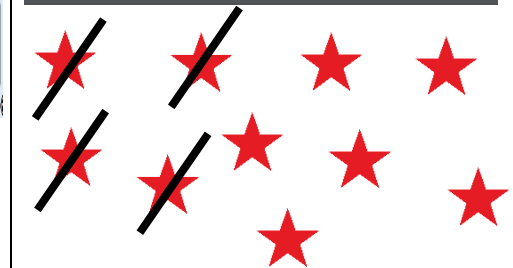
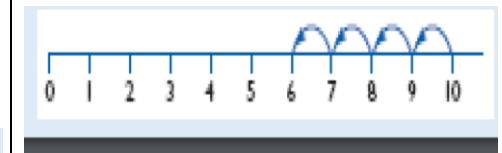


Construct number sentences verbally or using cards to go with practical activities.



Children are encouraged to read sentences aloud in different ways "five subtract one leaves four" "four is equal to five subtract one" "four is the same as five subtract one"

Solve simple problems using fingers





$5 - 1$



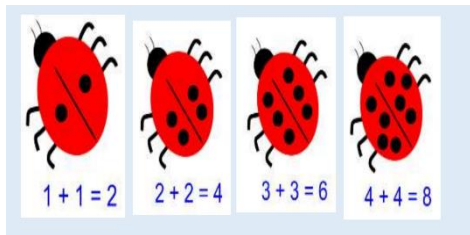
$= 4$

EYFS Multiplication and Division

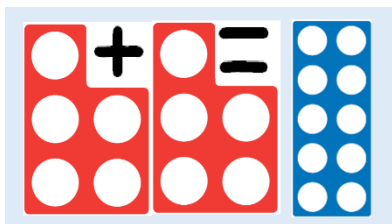
Early learning goals:

- They solve problems, including doubling, halving and sharing
- They solve problems, including halving and sharing.

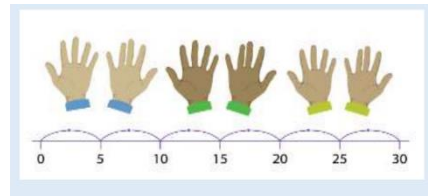
Use pictorial representations and concrete resources to double numbers to 10.



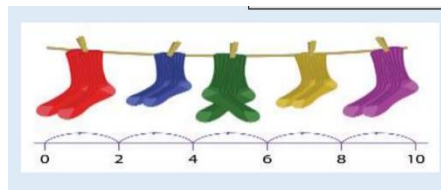
The link between addition and multiplication can be introduced through doubling.



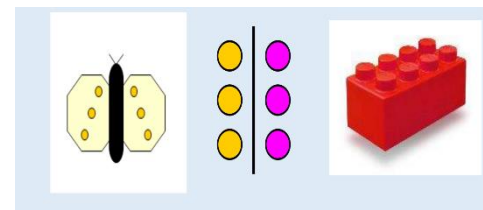
Use concrete sources, role play, stories and songs to begin counting in twos, fives and tens.



'I have 5 pairs of socks on this line. How many socks do I have altogether?'



Use pictorial representations and concrete resources to halve numbers to 10.



"I have got a sandwich to share between two people. Can you cut the sandwich in half?"



Children have a go at recording the calculation that has been carried out: e.g. by drawing pictures in groups or by arranging concrete apparatus into groups.

Begin to share quantities using practical resources, role play, stories and songs.



Sharing model:
I have 8 sweets. I want to share them with my friend. How many will we have each?

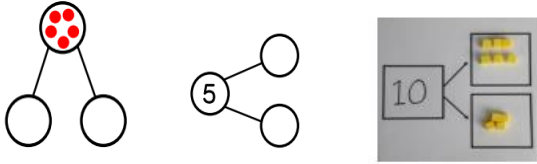


Year 1

Pupils memorise and reason with number bonds to 10 and 20 in several forms.

Complete the part whole models by drawing the counters then writing the numerals. Linking to bar modelling in Year 1.

Use part-part-whole models, base ten, cubes and bead strings to add two numbers together.

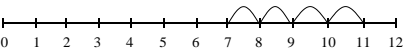


Understanding of counting on with a numbertrack and using numicon.



Understanding of counting on with a number line (supported by base ten materials)

7+4



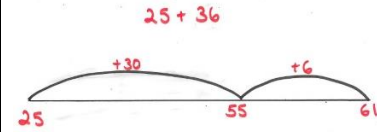
Ten frames to be used for addition, specifically number bonds.

Year 2

Practice addition to 20 and become increasing fluent in deriving facts.

Methods taught in Year 1 should continue to be used to consolidate learning and understanding in Year 2. Ensure base ten materials are used to support addition before moving on to number lines and other pictorial methods.

Continue to use number lines to develop understanding of:



Partitioning and bridging through 10.

The steps in addition often bridge through a multiple of 10

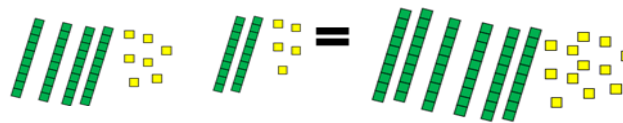
e.g. Children should be able to partition the 7 to relate adding the 2 and then the 5.

$$8 + 7 = 15$$

Use of diene to add 2 two digit numbers

$$47 + 25 =$$

$$47 + 25 = 72$$



Introduce the expanded written method before moving to the formal written method of addition.

Year 3

I can add numbers with up to three digits using formal written methods.

Pupil needing to use number lines from Year 2 into 3 should continue to do so depending on their ability.

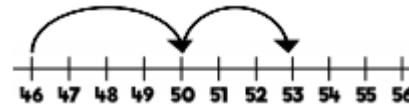
Using base 10 apparatus for addition:

E.g 245+7=



Using number lines:

E.g 346+7=

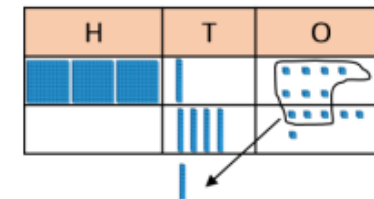


Towards a Written Method

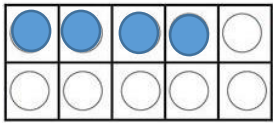
Introduce the expanded written method before moving to the formal written method of addition.

3	5	6	+	2	1	3	=					
3	5	6	→	3	0	0	+	5	0	+	6	
+	2	1	3	→	2	0	0	+	1	0	+	3
5	6	9	←	5	0	0	+	6	0	+	9	

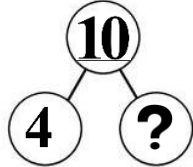
Introduce column addition modelled with place value counters or Diens.



	3	1	7
+		4	6
	3	6	3



Number Bond

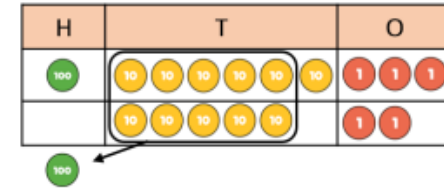


$$4 + ? = 10$$

T U	
2 6	
+ 2 5	
1 1	(6 + 5)
5 0	(20 + 20 + 10)
5 1	(50 + 1)

Children work towards using column method:
E.g. 28+7=

Tens	Ones	2 8
		+ 7
		3 5
		1

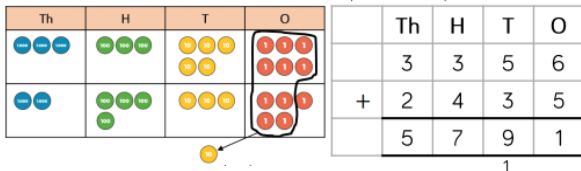


	1 6 3
+	5 2
	2 1 5
	1

Year 4

Pupils continue to practise mental calculation with increasingly large numbers using models and images to help them.

Children can draw a pictorial representation of the columns and place value counters to further support their learning and understanding.



Year 5

Pupils continue to practise mental calculation with increasingly large numbers using models and images to help them.

Written methods (progressing to more than 4-digits)

As Year 4, progressing when understanding of the expanded method is secure, children will move on to the formal column method for whole numbers and decimal numbers as an efficient written algorithm.

Year 6

Pupils continue to practise mental calculation with increasingly large numbers using models and images to help them.

Written methods

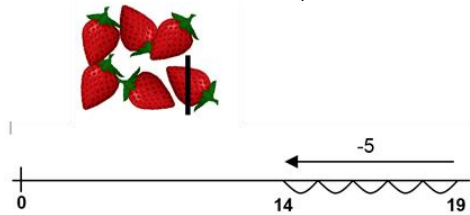
As year 5, progressing to larger numbers, aiming for both conceptual understanding and procedural fluency with columnar method to be secured. Continue calculating with decimals, including those with different numbers of decimal places

Addition

<p>789 + 642 becomes</p> $\begin{array}{r} 2634 \\ +4517 \\ \hline 7151 \\ \hline \end{array}$ <p style="text-align: center;"> <table style="margin: auto; border-collapse: collapse;"> <tr><td style="padding: 0 5px;">7</td><td style="padding: 0 5px;">8</td><td style="padding: 0 5px;">9</td></tr> <tr><td style="padding: 0 5px;">+</td><td style="padding: 0 5px;">6</td><td style="padding: 0 5px;">4</td><td style="padding: 0 5px;">2</td></tr> <tr><td colspan="4" style="border-top: 1px solid black; padding-top: 2px;"></td></tr> <tr><td style="padding: 0 5px;">1</td><td style="padding: 0 5px;">4</td><td style="padding: 0 5px;">3</td><td style="padding: 0 5px;">1</td></tr> <tr><td style="padding: 0 5px;">1</td><td style="padding: 0 5px;">1</td><td colspan="2"></td></tr> </table> </p> <p style="text-align: center;">Answer: 1431</p> <p>Find the missing numbers. What methods did you use?</p> <table style="margin: auto; border-collapse: collapse;"> <tr><td style="background-color: #f0e68c; padding: 5px;">3465</td></tr> <tr><td style="background-color: #e6f0e6; padding: 5px;">2980</td></tr> </table> <div style="margin-left: 100px;"> </div>	7	8	9	+	6	4	2					1	4	3	1	1	1			3465	2980	<p>Solve:</p> <table style="margin: auto; border-collapse: collapse;"> <tr><td style="padding: 0 5px;">Th</td><td style="padding: 0 5px;">H</td><td style="padding: 0 5px;">T</td><td style="padding: 0 5px;">O</td><td style="padding: 0 5px;">Th</td><td style="padding: 0 5px;">H</td><td style="padding: 0 5px;">T</td><td style="padding: 0 5px;">O</td></tr> <tr><td style="padding: 0 5px;">4</td><td style="padding: 0 5px;">4</td><td style="padding: 0 5px;">3</td><td style="padding: 0 5px;">4</td><td style="padding: 0 5px;">3</td><td style="padding: 0 5px;">3</td><td style="padding: 0 5px;">2</td><td style="padding: 0 5px;">5</td></tr> <tr><td colspan="8" style="border-top: 1px solid black; padding-top: 2px;"></td></tr> <tr><td style="padding: 0 5px;">3</td><td style="padding: 0 5px;">3</td><td style="padding: 0 5px;">2</td><td style="padding: 0 5px;">5</td><td colspan="4"></td></tr> </table> <table style="margin: auto; border-collapse: collapse;"> <tr><td style="padding: 0 5px;">H</td><td style="padding: 0 5px;">T</td><td style="padding: 0 5px;">U</td><td style="padding: 0 5px;">1/10</td><td style="padding: 0 5px;">1/100</td></tr> <tr><td style="padding: 0 5px;">4</td><td style="padding: 0 5px;">2</td><td style="padding: 0 5px;">3</td><td></td><td></td></tr> <tr><td style="padding: 0 5px;">3</td><td style="padding: 0 5px;">1</td><td style="padding: 0 5px;">4</td><td></td><td></td></tr> <tr><td colspan="5" style="border-top: 1px solid black; padding-top: 2px;"></td></tr> <tr><td style="padding: 0 5px;">7</td><td style="padding: 0 5px;">3</td><td style="padding: 0 5px;">7</td><td></td><td></td></tr> </table>	Th	H	T	O	Th	H	T	O	4	4	3	4	3	3	2	5									3	3	2	5					H	T	U	1/10	1/100	4	2	3			3	1	4								7	3	7			<p style="text-align: center;">Line up the decimal points</p> $\begin{array}{r} 22.3 \\ + 34.1 \\ \hline 56.4 \end{array}$ <p style="text-align: center;">Line up the decimal points</p> $\begin{array}{r} 1.234 \\ + 4.1 \\ \hline 5.334 \end{array}$ <p>Pupils will also learn to add three decimal numbers.</p> $\begin{array}{r} 3.452 \\ 9.74 \\ \hline 29.338 + \end{array}$
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+	6	4	2																																																																													
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Subtraction	Year 1	Year 2	Year 3
	<p>Pupils memorise and reason with number bonds in several forms (16 - 7 = 9 7 = 16 - 9)</p> <p>Missing number problems e.g. 7 = □ - 9; 20 - □ = 9; 15 - 9 = □; □ - □ = 11; 16 - 0 = □</p> <p>Use physical objects, counters, cubes etc to show how objects can be taken away.</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>6 - 2 = 4</p> </div> <div style="margin-right: 20px;"> <p>4 - 2 = 2</p> </div> <div> </div> </div>	<p>Practise subtraction to 20 becoming increasingly fluent in deriving facts (such as; 10 - 7 = 3 7 = 10 - 3 to calculate 100 - 70 = 30 70 = 100 - 30)</p> <p>Ensure concrete methods (base ten) are used to consolidate understanding before using number lines and other pictorial methods.</p> <p>Missing number problems e.g. 52 - 8 = □; □ - 20 = 25; 22 = □ - 21; 6 + □ + 3 = 11</p> <p>20 - ? = 13</p> <div style="margin-top: 10px;"> </div>	<p>Practise solving varied subtraction questions - calculations with two digit numbers, the answers exceed 100.</p> <p>Pupil needing to use number lines from Year 2 into 3 should continue to do so depending on their ability. Using base 10 apparatus for subtraction:</p> <p>E.g. 321-4=</p> <div style="margin-top: 10px;"> </div> <p>Using number lines:</p>

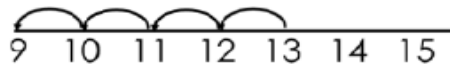
Understand subtraction as take-away:



Understand subtraction as finding the difference:

Use part-whole models, base ten, cubes and bead strings to subtract two numbers together by moving objects away from the group.

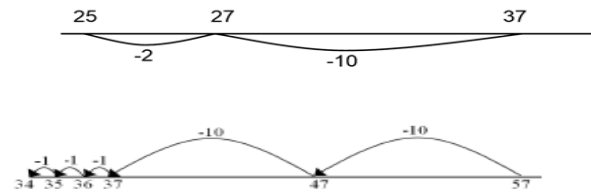
Count back on a number line or number track



Start at the bigger number and count back the smaller number showing the jumps on the number line.



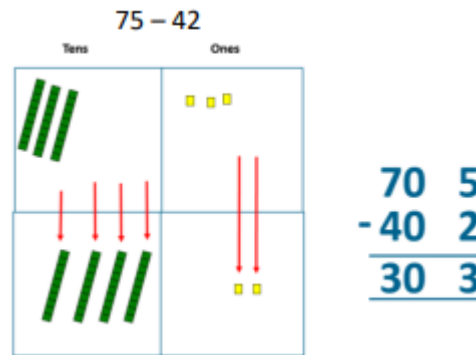
Use number lines to model take-away and difference. E.g.



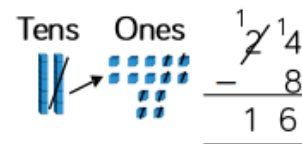
This can progress all the way to counting back using two 2 digit numbers.

Written methods (progressing to 2-digits)

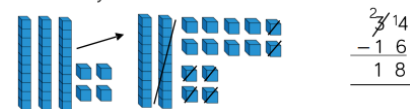
Introduce the expanded method of subtraction



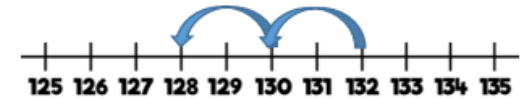
Move on to introduce column subtraction modelled with place value counters or Dienes.



Take 16 away from 34

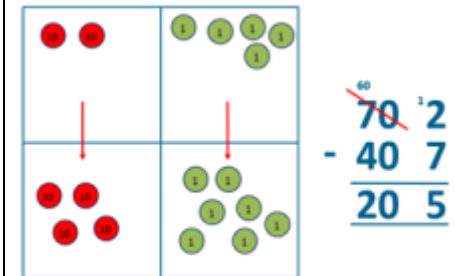


E.g. 132-4=



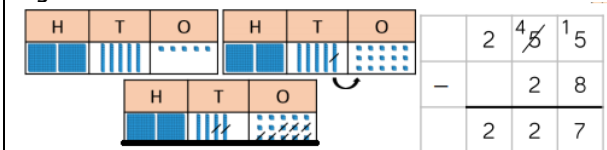
Written methods (progressing to 3-digits)

Continue to use the expanded method of subtraction before moving to the formal written method.

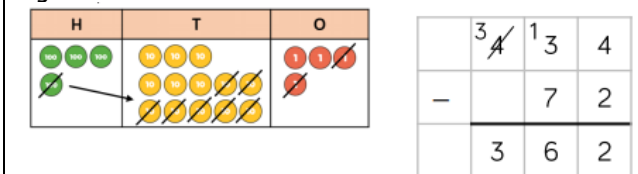


Introduce column subtraction modelled with place value counters or Dienes.


e.g. 255-28=

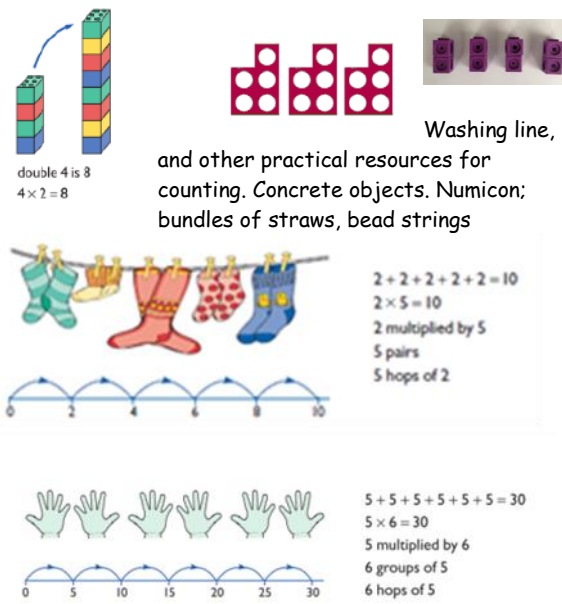
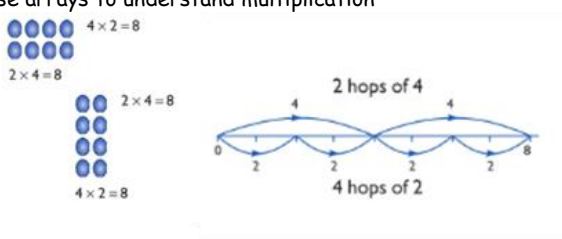
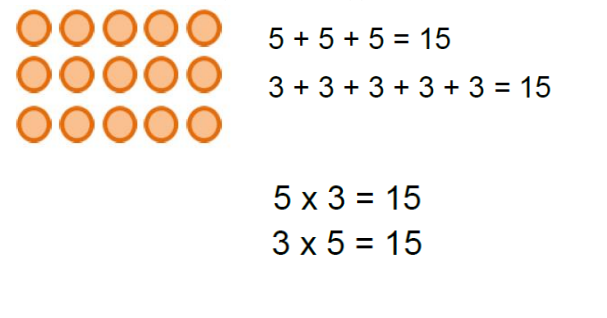
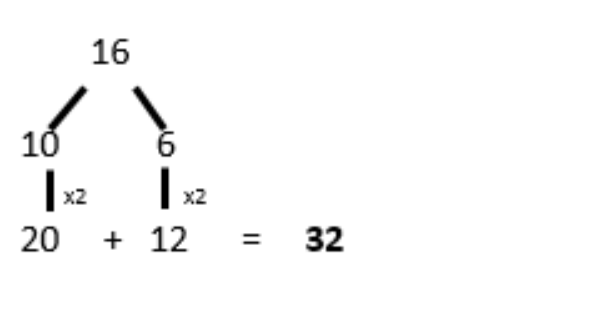
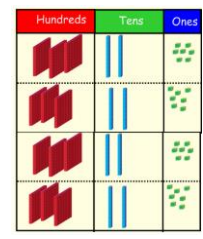
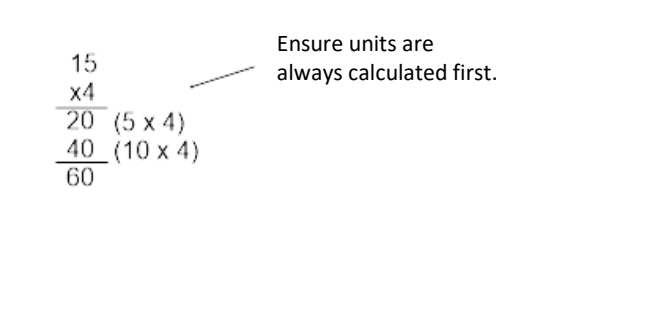


e.g. 434-72=



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	Year 4	Year 5	Year 6								
	Pupils continue to practise mental methods with increasingly large number using models and images to help them.										
Subtraction	<p>Children can draw a pictorial representation of the columns and place value counters to further support their learning and understanding.</p>  <table border="1" style="margin-left: 100px;"> <tr><td>Th</td><td>H</td><td>T</td><td>O</td></tr> <tr><td>3</td><td>5</td><td>1</td><td></td></tr> </table>	Th	H	T	O	3	5	1		<p>Written methods (progressing to more than 4-digits)</p> <p>As Year 4, progressing when understanding of the expanded method is secure, children will move on to the formal column method for whole numbers and decimal numbers as an efficient written algorithm.</p> $ \begin{array}{r} \text{T Th Th H T O} \\ 7 \quad 4 \quad 5 \quad 1 \quad 5 \quad 2 \\ - 2 \quad 2 \quad 6 \quad 2 \quad 3 \\ \hline 5 \quad 2 \quad 9 \quad 0 \quad 9 \end{array} $	<p>Written methods</p> <p>As year 5, progressing to larger numbers, aiming for both conceptual understanding and procedural fluency with columnar method to be secured. Continue calculating with decimals, including those with different numbers of decimal places</p>
	Th	H	T	O							
	3	5	1								
	<table border="0" style="width: 100%;"> <tr> <td style="text-align: center;">874 - 523 becomes</td> <td style="text-align: center;">932 - 457 becomes</td> <td style="text-align: center;">932 - 457 becomes</td> </tr> <tr> <td style="text-align: center;"> $\begin{array}{r} 8 \ 7 \ 4 \\ - 5 \ 2 \ 3 \\ \hline 3 \ 5 \ 1 \end{array}$ </td> <td style="text-align: center;"> $\begin{array}{r} 8 \ 12 \ 1 \\ 9 \ 3 \ 2 \\ - 4 \ 5 \ 7 \\ \hline 4 \ 7 \ 5 \end{array}$ </td> <td style="text-align: center;"> $\begin{array}{r} 1 \ 1 \\ 9 \ 3 \ 2 \\ - 4 \ 5 \ 7 \\ \hline 4 \ 7 \ 5 \end{array}$ </td> </tr> <tr> <td style="text-align: center;">Answer: 351</td> <td style="text-align: center;">Answer: 475</td> <td style="text-align: center;">Answer: 475</td> </tr> </table>	874 - 523 becomes	932 - 457 becomes	932 - 457 becomes	$ \begin{array}{r} 8 \ 7 \ 4 \\ - 5 \ 2 \ 3 \\ \hline 3 \ 5 \ 1 \end{array} $	$ \begin{array}{r} 8 \ 12 \ 1 \\ 9 \ 3 \ 2 \\ - 4 \ 5 \ 7 \\ \hline 4 \ 7 \ 5 \end{array} $	$ \begin{array}{r} 1 \ 1 \\ 9 \ 3 \ 2 \\ - 4 \ 5 \ 7 \\ \hline 4 \ 7 \ 5 \end{array} $	Answer: 351	Answer: 475	Answer: 475	<p style="text-align: center;">Line up the decimal points</p> $ \begin{array}{r} 4.321 \\ - 4.1 \\ \hline 0.221 \end{array} $
874 - 523 becomes	932 - 457 becomes	932 - 457 becomes									
$ \begin{array}{r} 8 \ 7 \ 4 \\ - 5 \ 2 \ 3 \\ \hline 3 \ 5 \ 1 \end{array} $	$ \begin{array}{r} 8 \ 12 \ 1 \\ 9 \ 3 \ 2 \\ - 4 \ 5 \ 7 \\ \hline 4 \ 7 \ 5 \end{array} $	$ \begin{array}{r} 1 \ 1 \\ 9 \ 3 \ 2 \\ - 4 \ 5 \ 7 \\ \hline 4 \ 7 \ 5 \end{array} $									
Answer: 351	Answer: 475	Answer: 475									
<p>Extend to up to two places of decimals (same number of decimals places) and adding several numbers (with different numbers of digits).</p> <p style="color: red; font-weight: bold;">line up the decimals</p> $ \begin{array}{r} 44.5 \\ - 3.3 \\ \hline 41.2 \end{array} $											

	Year 1	Year 2	Year 3
Multiplication	<p>Through grouping and sharing small quantities, pupils begin to understand doubling numbers and quantities. The children can count in twos, fives and tens.</p>	<p>Children practise and become fluent in the 2, 5 and 10 multiplication tables. They connect the 10 multiplication table to place value.</p>	<p>Practise their recall of multiplication tables and through doubling they connect the 2, 4 and 8 multiplication tables.</p>
	<p>Understand multiplication is related to doubling and combining groups of the same size (repeated addition)</p>  <p>double 4 is 8 $4 \times 2 = 8$</p> <p>Washing line, and other practical resources for counting. Concrete objects. Numicon; bundles of straws, bead strings</p> <p>$2 + 2 + 2 + 2 + 2 = 10$ $2 \times 5 = 10$ 2 multiplied by 5 5 pairs 5 hops of 2</p> <p>$5 + 5 + 5 + 5 + 5 = 30$ $5 \times 6 = 30$ 5 multiplied by 6 6 groups of 5 6 hops of 5</p> <p>Problem solving with concrete objects (including money and measures. Use cuisenaire rods, numicon and place value counters to develop the vocabulary relating to 'times' -</p> <p>Use arrays to understand multiplication</p>  <p>$4 \times 2 = 8$ $2 \times 4 = 8$ $4 \times 2 = 8$</p> <p>2 hops of 4 4 hops of 2</p>	<p>Expressing multiplication as a number sentence using \times</p> <p>Using understanding of the inverse and practical resources to solve missing number problems.</p> <p>$7 \times 2 = \square$ $\square = 2 \times 7$ $7 \times \square = 14$ $14 = \square \times 7$ $\square \times 2 = 14$ $14 = 2 \times \square$ $\square \otimes = 14$ $14 = \square \otimes$</p> <p>Develop understanding of multiplication using array and number lines (see Year 1). Include multiplications not in the 2, 5 or 10 times tables. Begin to develop understanding of multiplication as scaling (3 times bigger/taller).</p>  <p>$5 + 5 + 5 = 15$ $3 + 3 + 3 + 3 + 3 = 15$</p> <p>$5 \times 3 = 15$ $3 \times 5 = 15$</p> <p><u>Towards written methods</u></p> <p>Use jottings to develop an understanding of doubling two digit numbers.</p>  <p>16 10 6 x2 x2 20 + 12 = 32</p>	<p>Mental methods</p> <p>Doubling 2 digit numbers using partitioning</p> <p>Demonstrating multiplication on a number line - jumping in larger groups of amounts</p> <p>$13 \times 4 = 10 \text{ groups } 4 = 3 \text{ groups of } 4$</p> <p>Written method (2d x 1d)</p> <p>Developing written methods using understanding of visual images.</p> <p>Show the links with arrays to first introduce the grid method. Move onto Dienes cubes to move towards a more compact method.</p>  <p>Pupils begin to use columnar methods to support multiplication calculations. This begins using an expanded column method with brackets.</p>  <p>15 x4 20 (5 x 4) 40 (10 x 4) 60</p> <p>Ensure units are always calculated first.</p>

	Year 4	Year 5	Year 6
	Pupils continue to practise mental methods with increasingly larger...	Children practice mental calculations with increasingly larger...	Understands mental calculations with increasingly larger...

Year 4

Recall all multiplication facts up to 12×12 . Counting in multiples of 6, 7, 9, 25 and 1000, and steps of $1/100$. Solving practical problems where children need to scale up. Relate to known number facts. (E.g. how tall would a 25cm sunflower be if it grew 6 times taller.

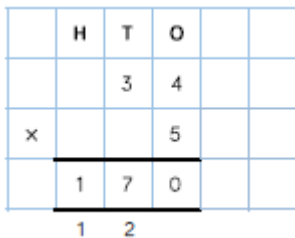
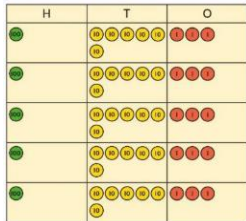
Mental methods

Counting in multiples of 6, 7, 9, 25 and 1000, and steps of $1/100$.

Solving practical problems where children need to scale up. Relate to known number facts. (e.g. how tall would a 25cm sunflower be if it grew 6 times taller?)

Short Multiplication

Move on to place value counters to show how we are finding groups of a number. We are multiplying by 5 so we need 5 rows of that number. It may be necessary for some children to recap learning from year 3 and the use of base ten when multiplying.



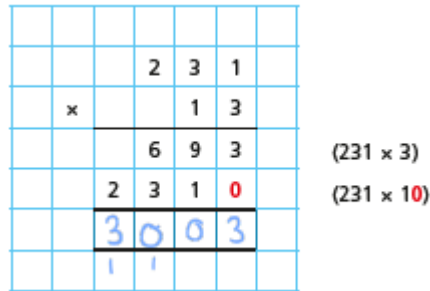
Year 5

Identify multiples and factors and factor pairs of numbers. Know and use prime numbers and prime factors. Recognise squared and cubed numbers (using the correct notation).

Short Multiplication

$$\begin{array}{r} 126 \\ \times 3 \\ \hline 378 \\ 1 \end{array}$$

Long Multiplication

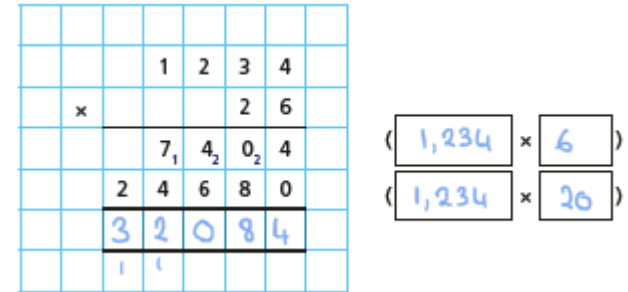


Year 6

Undertake mental multiplications with increasingly hard numbers and decimals. Continue to use all multiplication facts to aid fluency.

Multiply numbers up to 4 digits by a two-digit whole number using the formal written method of multiplication.

Long Multiplication



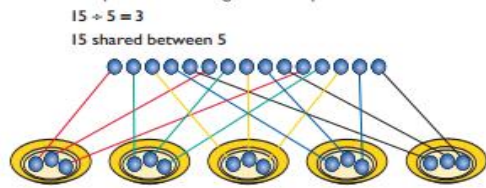
	<p>It is important at this stage that they always multiply the ones first and note down their answer followed by the tens which they note below.</p>		
Division	Year 1	Year 2	Year 3
	<p>Through sharing small quantities, children begin to understand division, and finding simple</p>	<p>Children practise and become fluent in their recall of the 2, 5 and 10 division facts.</p>	<p>Children practise and become fluent in the recall of the 2, 3, 4 and 8 division facts.</p>

Children must have secure counting skills- being able to confidently count in 2s, 5s and 10s. Children should be given opportunities to reason about what they notice in number patterns.

Group and share small quantities- understanding the difference between the two concepts.

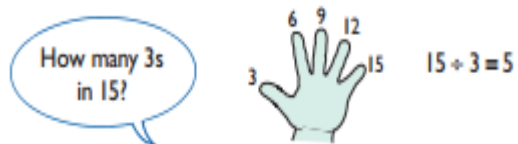
Sharing

Develops importance of one-to-one correspondence.



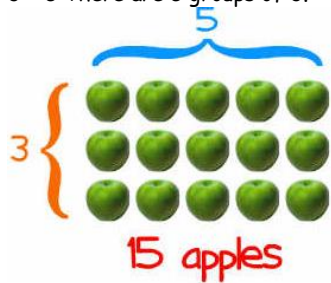
Grouping

Children should apply their counting skills to develop some understanding of grouping.



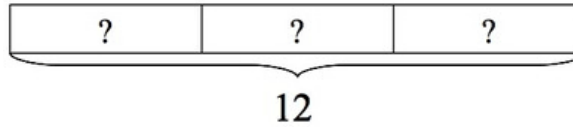
Arrays

Use of arrays as a pictorial representation for division. $15 \div 3 = 5$ There are 5 groups of 3.



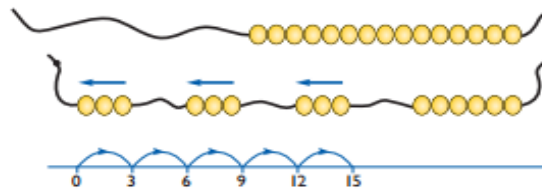
Sharing using a bar model

$12 \div 3 = ?$



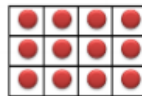
Grouping on a number line

Group from zero in jumps of the divisor to find out 'how many groups of 3 are there in 15?'
15 divided by 3



Arrays

Continue work on arrays. Support children to understand how multiplication and division are inverse. Look at an array - what do you see?



$3 \times 4 = 12$
 $12 \div 4 = 3$

Missing number problems.



$20 = \square \times 5$

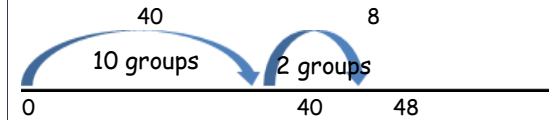


$3 = \square \div 6$

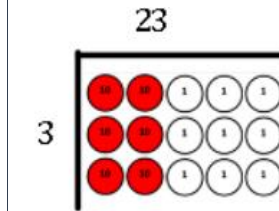
Becoming more efficient using a numberline

Children need to be able to partition the dividend in different ways.

$48 \div 4 = 12$

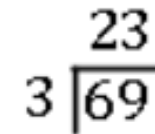


Extending divisions to resemble written method of short division.



$69 \div 3 = 23$

Progressing to the formal written method of short division:



Division

Year 4

Children should know all the division facts up to 12×12

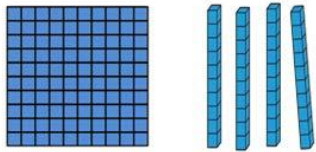
Year 5

Undertake mental divisions with increasingly hard numbers and decimals.

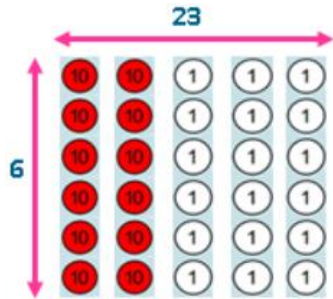
Year 6

Undertake mental divisions with increasingly hard numbers and decimals.

Use base 10 blocks to divide by 10
 $140 \div 10 = 14$



Grouping/sharing counters are used to make the link with short division



Leads directly onto:

$$\begin{array}{r} 023 \\ 6 \overline{)138} \\ 138 \\ \hline 0 \end{array}$$

$138 \div 6 = 23$

Showing remainder as a whole number:

$$\begin{array}{r} 858r2 \\ 3 \overline{)2576} \\ \underline{30} \\ 57 \\ \underline{60} \\ 17 \\ \underline{15} \\ 26 \\ \underline{24} \\ 2 \end{array}$$

Answer: 858 remainder 2

Showing remainder as a fraction:

$$\begin{array}{r} 858r2 \\ 3 \overline{)2576} \\ \underline{30} \\ 57 \\ \underline{60} \\ 17 \\ \underline{15} \\ 26 \\ \underline{24} \\ 2 \end{array}$$

Answer: $858 \frac{2}{3}$

\div = signs and missing numbers

Continue using a range of equations but with appropriate numbers

Written method of division

Continue using the bus stop method, showing remainders as whole numbers, fractions and decimals.

Move on to long division.

$496 \div 11$ becomes

$$\begin{array}{r} 45r1 \\ 11 \overline{)496} \\ \underline{44} \\ 56 \\ \underline{55} \\ 1 \end{array}$$

Answer: $45 \frac{1}{11}$

Long Division

$432 \div 15$ becomes

$$\begin{array}{r} 28r12 \\ 15 \overline{)432} \\ \underline{30} \\ 132 \\ \underline{120} \\ 12 \end{array}$$

Answer: 28 remainder 12

$432 \div 15$ becomes

$$\begin{array}{r} 28 \\ 15 \overline{)432} \\ \underline{30} \\ 132 \\ \underline{120} \\ 12 \end{array}$$

$$\frac{12}{15} = \frac{4}{5}$$

Answer: $28 \frac{4}{5}$

$432 \div 15$ becomes

$$\begin{array}{r} 28.8 \\ 15 \overline{)432.0} \\ \underline{30} \\ 132 \\ \underline{120} \\ 120 \\ \underline{120} \\ 0 \end{array}$$

Answer: 28.8