

## **Calculation Policy**

<b>Version</b>	<b>Date</b>
Last reviewed	July 2022
Next reviewed	July 2023
Owner	Maths Leader - L Clarkson
Approver	Academy Council

Adopting a common calculation policy within our pyramid ensures that children will be taught in the same way in both key stage one and two, thus developing their understanding of the subject as they move up through school, transition between key stages and onto to key stage three. Consequently, teaching time will be spent in promoting mathematical procedures that are flexible, accurate, consistent, efficient and appropriate methods of calculation in all key stages using the same methods.

Within the pyramid, it is essential to be consistent in our approach to different calculation methods; using a common calculation policy is the means by which we will strive to address this.

Although the main focus of this policy is on effective written compact methods, it is important to recognise that the ability to calculate mentally lies at the heart of mathematics. Mental calculations are not at the exclusion of written recordings and should be seen as complementary to, and not as separate from it. In every written method, there is an element of mental processing. Written recordings both help children to clarify their thinking and support and extend the development of more fluent and sophisticated mental strategies.

### **Key Elements**

Discussion will play a key part in maths lessons, Children will be encouraged to talk about the processes they have used to reach their answers. Teachers will encourage and promote the use of correct mathematical vocabulary.

Children will be taught to partition in different ways, use number bonds and times table facts wherever possible to aid calculations. Children will be encouraged to show their working out, and will be taught how to record their work methodically.

As children move up through school, the calculation methods will show progression and the numbers used will be more age/stage appropriate.

Children should be encouraged to check their work by estimation to see if their answer is reasonable and sensible as well as perform the inverse relationship to check for answer accuracy.

Where possible, mathematics will be used in other curriculum areas to enrich the curriculum and develop cross-curricular links.

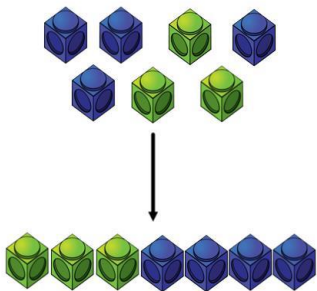
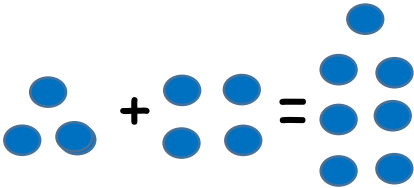
# Addition

## EYFS Objectives

- Using quantities and objects, they add two single-digit numbers and count on or back to find the answer.

## Vocabulary

add, more, and, make, sum, total, altogether, score, double, one more, two more, ten more..., how many more to make...?, how many more is... than...?

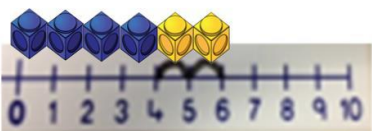
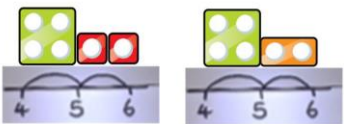
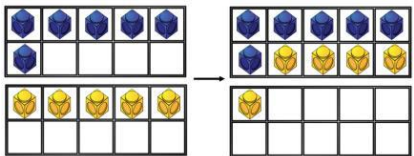
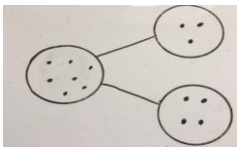
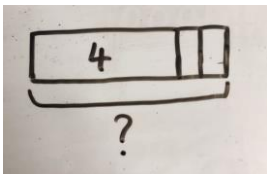
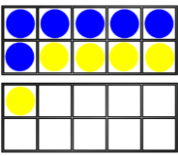
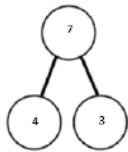

Concrete	Pictorial	Abstract
<p>Use resources e.g. cars, dinosaurs, shells, bears</p> 	<p>Draw objects</p> 	<p>Write numbers onto a part whole model</p> $3 + 4 = \square$

## Year 1 Objectives

- To read, write and interpret mathematical statements involving addition (+)
- To add one-digit and two-digit numbers to 20, including zero
- To solve one-step problems that involve addition, using concrete objects and pictorial representations, and missing number problems

## Vocabulary

number bonds, add, more, plus, make, sum, total, altogether, inverse double, near double, equals, is the same as (including equals sign), score, one more, two more... ten more, how many more to make...?, how many more is... than...?, how much more is...?

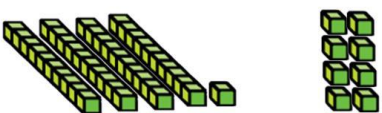
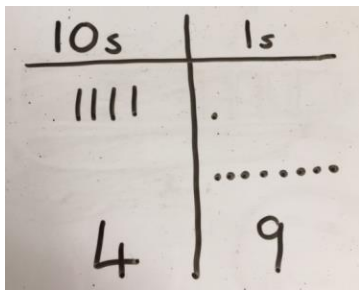
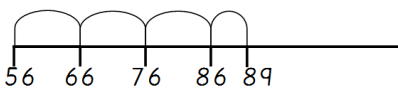
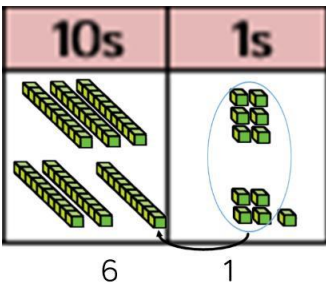
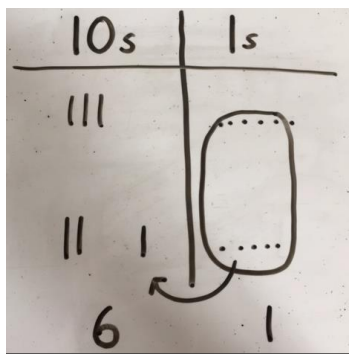
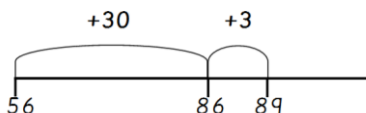
Concrete	Pictorial	Abstract
<p>Counting on using a number line and practical resources</p>   <p>Use 10 Frames</p> 	<p>Draw objects onto a part whole model</p>  <p>Use bar model</p>  <p>Use a 10 Frame</p> 	<p>Write numbers onto a part whole model</p>  <p>Use Number Lines</p>  <p>Written Method</p> $6 + \square = 11$ $6 + 5 = 5 + \square$ $6 + 5 = \square + 4$

## Year 2 Objectives

- To add 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 and adding three one-digit numbers
- To solve problems with addition using concrete objects and pictorial representations, including those involving numbers, quantities and measures
- To show that addition of two numbers can be done in any order
- To recognise and use the inverse relationship and use this to check calculations and solve missing number problems.

## Vocabulary

add, addition, more, plus, make, sum, total, altogether, score, double, near double, one more, two more... ten more... one hundred more, how many more to make...?, how many more is... than...?, how much more is...?, tens boundary

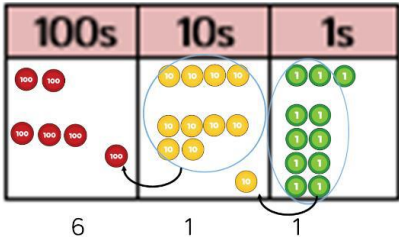
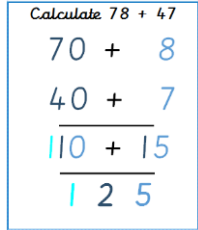
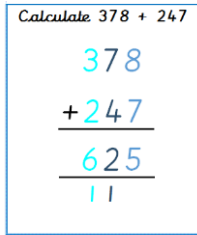
Concrete	Pictorial	Abstract
<p>Base 10</p> 	<p>Place Value Chart/Whiteboard</p> 	<p>Number Line</p> <p>Counting on in tens and ones</p> $56 + 33 = 89$ <p>+10 +10 +10 +3</p> 
<p>Base 10 and Partitioning</p> 	<p>Place Value Chart/Whiteboard including carrying</p> 	<p>Number Line</p> <p>Adding the tens and then units</p> $56 + 33 = 89$ <p>+30 +3</p>  <p>Partition Method</p> <p>Calculate <math>52 + 6</math></p> $\begin{array}{r} 50 + 2 \\ 0 + 6 \\ \hline 50 + 8 \\ \hline 58 \end{array}$

### Year 3 Objectives

- To add numbers with up to three digits, using formal written methods of columnar addition
- To estimate the answer to a calculation and use inverse operations to check answers
- To solve problems, including missing number problems, using number facts, place value, and more complex addition

### Vocabulary

add, increase, total, plus, sum, more, altogether, column addition, estimate, inverse, double, near double, one more, ten more... one hundred more, how many more to make ...? how many more is... than ...? how much more is...?, tens boundary, hundreds boundary

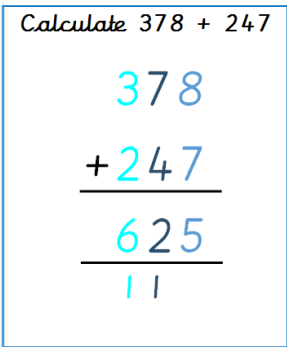
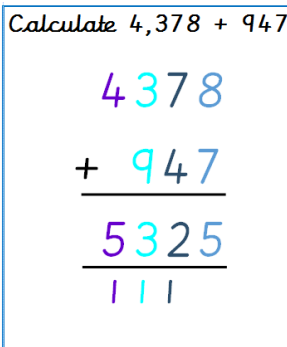
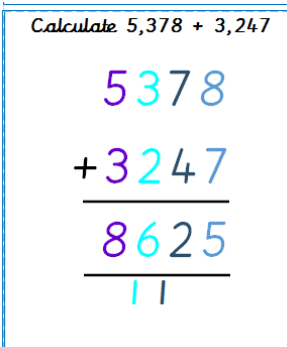
Concrete	Abstract
<p>Place Value Counters</p>  <p>The diagram shows three columns labeled 100s, 10s, and 1s. The 100s column has 6 red circular counters. The 10s column has 1 yellow circular counter. The 1s column has 1 green circular counter. Arrows point from the counters to the numbers 6, 1, and 1 below their respective columns.</p>	<p>Partitioning Column Method</p>  <p>Calculate <math>78 + 47</math></p> $\begin{array}{r} 70 + 8 \\ 40 + 7 \\ \hline 110 + 15 \\ \hline 125 \end{array}$ <p>Concrete Column Method</p>  <p>Calculate <math>378 + 247</math></p> $\begin{array}{r} 378 \\ + 247 \\ \hline 625 \\ \hline \end{array}$

### Year 4 Objectives

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

### Vocabulary

add, addition, more, plus, increase, sum, total, altogether, score, double, near double, tens boundary, hundreds boundary, thousands boundary, inverse

Abstract		
Formal Written method (carrying can be above or below the equal sign)		
<p>Calculate <math>378 + 247</math></p>  $\begin{array}{r} 378 \\ + 247 \\ \hline 625 \\ \hline \end{array}$	<p>Calculate <math>4,378 + 947</math></p>  $\begin{array}{r} 4378 \\ + 947 \\ \hline 5325 \\ \hline \end{array}$	<p>Calculate <math>5,378 + 3,247</math></p>  $\begin{array}{r} 5378 \\ + 3247 \\ \hline 8625 \\ \hline \end{array}$

### Year 5 Objectives

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

### Vocabulary

Efficient written method, add, addition, more, plus, increase, sum, total, altogether, score, tens boundary, hundreds boundary, thousands boundary, units boundary, tenths boundary, inverse

### Abstract

Formal Written method (carrying can be above or below the equal sign)

Calculate  $75,378 + 43,247$

$$\begin{array}{r} 75378 \\ + 43247 \\ \hline 118625 \\ \hline \end{array}$$

### Year 6 Objectives

- To solve addition multi-step problems in contexts, deciding which operations and methods to use and why
- To use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

### Vocabulary

order of operations, column addition, add, in total, answer, tens boundary, hundreds boundary, thousands boundary, millions boundary, units boundary, tenths boundary, hundredths boundary, decimal place, inverse

### Abstract

Formal Written method (carrying can be above or below the equal sign)

Calculate  $75,378 + 43,247$

$$\begin{array}{r} 75378 \\ + 43247 \\ \hline 118625 \\ \hline \end{array}$$


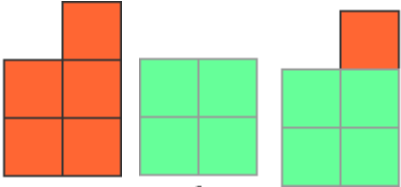
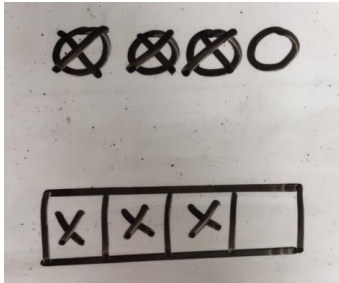
# Subtraction

## EYFS Objectives

- Using quantities and objects, they subtract two single-digit numbers and count on or back to find the answer.

## Vocabulary

take (away), leave, how many are left/left over?, how many have gone?, one less, two less... ten less..., how many fewer is... than...?, difference between, is the same as

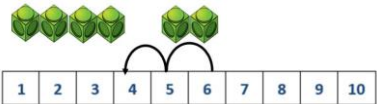
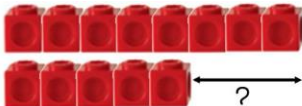
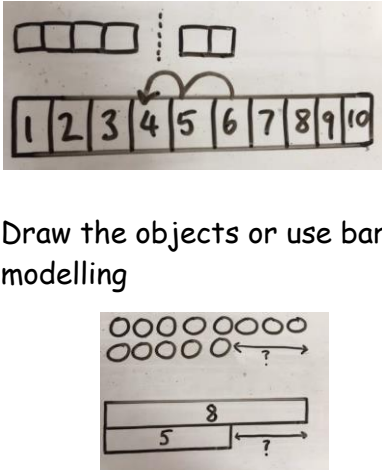
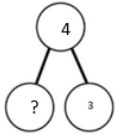

Concrete	Pictorial	Abstract
<p>Use resources e.g. ten frames, Numicon, cubes, bean bags</p>  <p>Find the difference using cubes, Numicon, Cuisenaire rods</p> 	<p>Draw objects they are using and then cross out the correct amount.</p> $4 - 3 = 1$ 	<p>Write numbers onto a part whole model</p> $4 - 3 = \square$

## Year 1 Objectives

- To read, write and interpret mathematical statements involving subtraction (-)
- To subtract one-digit and two-digit numbers to 20, including zero
- To solve one-step problems that involve subtraction, using concrete objects and pictorial representations, and missing number problems

## Vocabulary

subtract, take away, minus, leave, how many fewer is...than...?, how much less is...? half, halve, how many are left/left over?, how many are gone?, one less, two less, ten less..., how many fewer is... than...?, how much less is...? =, equals, sign, is the same as, count on, count back, difference between. how many more is...than...?, how much more is...?

Concrete	Pictorial	Abstract
<p>Counting back using a number line and practical resources</p>  <p>Find the difference using cubes, Numicon, Cuisenaire rods</p> 	<p>Use pictorial methods</p>  <p>Draw the objects or use bar modelling</p>	<p>Write numbers onto a part whole model</p>  <p>Use Number Lines</p>  <p>Written Method</p> <p>8 - 5, the difference is <span style="border: 1px solid black; display: inline-block; width: 20px; height: 20px; vertical-align: middle;"></span></p>

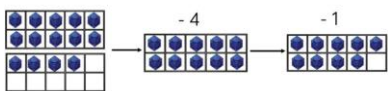
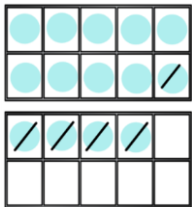
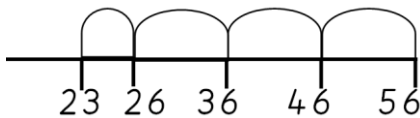
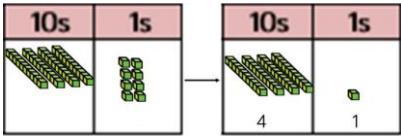
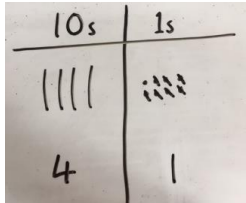
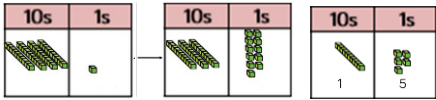
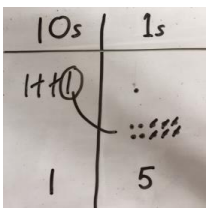


## Year 2 Objectives

- To 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
- To solve problems with subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures
- To show that addition of two numbers can be done in any order and subtraction of one number from another cannot
- To recognise and use the inverse relationship and use this to check calculations and solve missing number problems.

## Vocabulary

subtract, minus, leave, how many are left/left over?, how many less is... than...?, how much fewer is...?, difference between, half, halve, equals, sign, is the same as, partition, inverse, count on, count back, one less, ten less... one hundred less.

Concrete	Pictorial	Abstract
<p>Use a 10 Frame</p> 	<p>Use a 10 Frame</p> 	<p>Number Line</p> <p>Counting back in tens and ones</p> $56 - 33 = 23$ 
<p>Base 10</p> 	<p>Place Value Chart/Whiteboard</p> 	<p>Partition Method</p> <p>Calculate <math>26 - 3</math></p> $\begin{array}{r} 20 + 6 \\ - \quad + 3 \\ \hline 20 + 3 \\ \hline 23 \end{array}$
<p>Base 10 and exchange</p> 	<p>Place Value Chart/Whiteboard including exchange</p> 	

### Year 3 Objectives

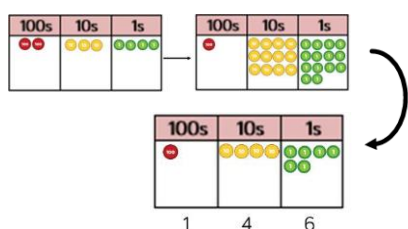
- To subtract numbers with up to three digits, using formal written methods of columnar subtract
- To estimate the answer to a calculation and use inverse operations to check answers
- To solve problems, including missing number problems, using number facts, place value, and more complex subtractions

### Vocabulary

leave, subtract, less, minus, column subtraction, inverse, decomposition, exchange, how many are left/left over?, difference between, how many more/fewer is... than...?, how much more/less is...?, Is the same as, equals, sign. multiples of tens and hundreds.

#### Concrete

##### Place Value Counters



#### Abstract

##### Partitioning Column Method

Calculate  $373 + 46$

$$\begin{array}{r} 300 + 60 + 3 \\ - 40 + 6 \\ \hline 300 + 20 + 7 \\ \hline 327 \end{array}$$

##### Concrete Column Method

Calculate  $373 - 46$

$$\begin{array}{r} 373 \\ - 46 \\ \hline 327 \end{array}$$

### Year 4 Objectives

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

### Vocabulary

subtract, subtraction, minus, decrease, leave, how many are left/left over?, difference between, how many more/fewer is... than...?, how much more/less is...?, Is the same as, equals, sign. Column subtraction, decomposition, exchange, multiples of thousand, inverse.

#### Abstract

##### Formal Written Method

Calculate  $373 - 246$

$$\begin{array}{r} 373 \\ - 246 \\ \hline 127 \end{array}$$

Calculate  $5,373 - 3,246$

$$\begin{array}{r} 5373 \\ - 3246 \\ \hline 2127 \end{array}$$



### Year 5 Objectives

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

### Vocabulary

efficient written method, subtract, subtraction, minus, decrease, difference between, inverse, decimals, units and tenths boundary, column subtraction, decomposition, exchange.

### Abstract

### Formal Written Method

Calculate 75,373 - 43,246

$$\begin{array}{r} 75,373 \\ - 43,246 \\ \hline 31,427 \end{array}$$

The image shows a formal written subtraction method for 75,373 minus 43,246. The numbers are aligned by place value. The result, 31,427, is written below the line. The digits 4, 1, 6, and 1 are written above the digits 5, 3, 7, and 3 respectively, indicating the borrowing process. The digits 7, 5, 3, 7, and 3 are written in a larger font, and the digits 4, 3, 2, 4, and 6 are written in a smaller font. The result 31,427 is written in a larger font.

### Year 6 Objectives

- To solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- To use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

### Vocabulary

order of operations, subtract, decrease, difference, inverse, decimals, units, tenths and hundredths boundary, column subtraction, decomposition, exchange.

### Abstract

### Formal Written Method

Calculate 75,373 - 43,246

$$\begin{array}{r} 75,373 \\ - 43,246 \\ \hline 31,427 \end{array}$$

The image shows a formal written subtraction method for 75,373 minus 43,246. The numbers are aligned by place value. The result, 31,427, is written below the line. The digits 4, 1, 6, and 1 are written above the digits 5, 3, 7, and 3 respectively, indicating the borrowing process. The digits 7, 5, 3, 7, and 3 are written in a larger font, and the digits 4, 3, 2, 4, and 6 are written in a smaller font. The result 31,427 is written in a larger font.

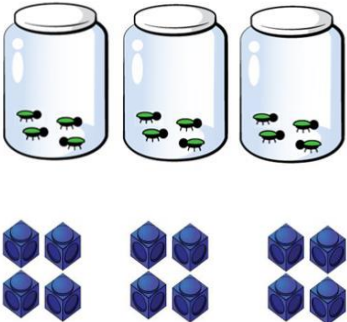
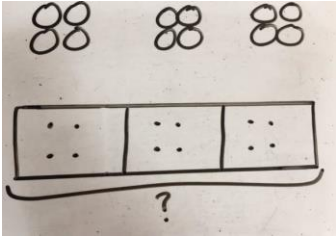
# Multiplication

## EYFS Objectives

- Using quantities and objects to solve problems, including doubling

## Vocabulary

group, lots of, double

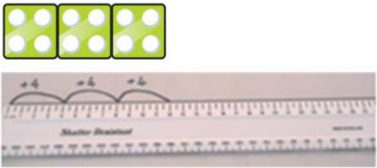
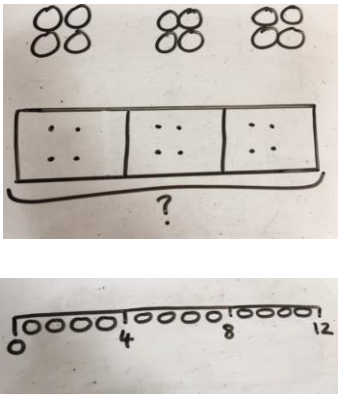
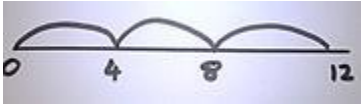
Concrete	Pictorial	Abstract
<p>Repeated grouping/repeated addition</p> 	<p>Use pictorial methods</p> 	<p>Write numbers</p> $4 + 4 + 4 = 12$

## Year 1 Objectives

- To solve one-step problems involving multiplication, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

## Vocabulary

odd, even, count in twos, fives, count in tens (forwards from/backwards from), how many times? lots of, groups of, once, twice, five times, ten times, multiple of, times, multiply, multiply by, array, row, column, double.

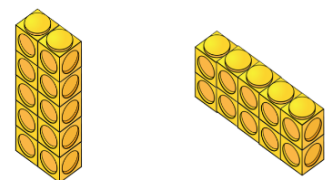
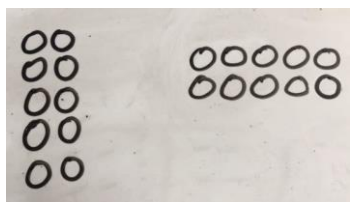
Concrete	Pictorial	Abstract
<p>Use Number Lines and/or Cuisenaire rods to show repeated addition</p> 	<p>Use pictorial method</p> 	<p>Use Number Lines</p> 

## Year 2 Objectives

- To recall and use multiplication facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- To calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication ( $\times$ ) and equals ( $=$ ) signs
- To show that multiplication of two numbers can be done in any order (commutative)
- To solve problems involving multiplication, using materials, arrays, repeated addition, mental methods, and multiplication facts, including problems in contexts.

## Vocabulary

odd, even, twos, fives, tens, threes, lots of, groups of, once, twice, three times, five times, ten times, multiple of, times, multiply, multiply by, repeated addition, array, row, column, double.

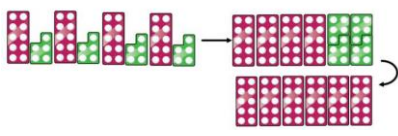

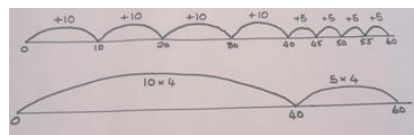
Concrete	Pictorial	Abstract
<p>Use arrays to illustrate</p>  <p>2 lots of 5      5 lots of 2</p>	<p>Pictorial arrays</p> 	<p>Use arrays to write calculations</p> $10 = 2 \times 5$ $5 \times 2 = 10$ $2 + 2 + 2 + 2 + 2 = 10$ $10 = 5 + 5$

## Year 3 Objectives

- To recall and use multiplication facts for the 3, 4 and 8 multiplication tables
- To write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
- To solve problems, including missing number problems, involving multiplication, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

## Vocabulary

multiply, times, groups of, equal groups of, multiple of, multiplied by, estimate, inverse, grid multiplication, expanded column multiplication, partition, commutative, associative, product

Concrete	Pictorial	Abstract												
<p>Partition to Multiply</p> 	<p>Arrays</p>  <p><math>4 \times 6 = 24</math>      <math>6 \times 4 = 24</math></p>	<p>Use Number Line</p>  <p>Partition and/or Grid Method</p> $20 \times 5 = 100$ $3 \times 5 = \underline{15}$ $\underline{115}$ <p>Calculate <math>23 \times 5</math></p> <table border="1"> <tr> <td><math>\times</math></td> <td>5</td> <td></td> </tr> <tr> <td>20</td> <td>100</td> <td></td> </tr> <tr> <td>3</td> <td>15</td> <td>+</td> </tr> <tr> <td></td> <td>115</td> <td></td> </tr> </table>	$\times$	5		20	100		3	15	+		115	
$\times$	5													
20	100													
3	15	+												
	115													

## Year 4 Objectives

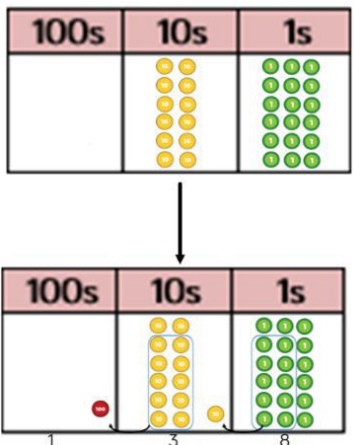
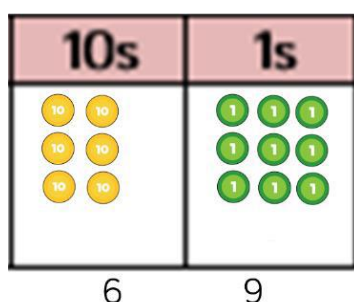
- To recall multiplication facts for multiplication tables up to  $12 \times 12$
- To use place value, known and derived facts to multiply mentally, including: multiplying by 0 and 1; multiplying together three numbers
- To multiply two-digit and three-digit numbers by a one-digit number using formal written layout
- To 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.

## Vocabulary

multiply, multiplied by, product, short multiplication, partition, distributive law, commutative, groups of, multiply, times, multiples, inverse.

### Concrete

Formal Column Method



### Abstract

Compact Written Method

(carrying can be above or below the equal sign)

Calculate  $23 \times 3$

$$\begin{array}{r} 23 \\ \times 3 \\ \hline 69 \end{array}$$

Calculate  $23 \times 6$

$$\begin{array}{r} 23 \\ \times 6 \\ \hline 138 \\ 11 \end{array}$$

### Year 5 Objectives

- To 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
- To multiply numbers mentally drawing upon known facts
- To multiply whole numbers and those involving decimals by 10, 100 and 1000
- To solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
- To solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

### Vocabulary

composite numbers, prime number, prime factor, cube number, square number, derive, factor pairs, formal written method, times, multiply, multiplied by, multiple of, product, short multiplication, partition, long multiplication, scaling, decimal place, units, tenths and hundreds.

### Abstract

Formal Written Method (carrying can be above or below the equal sign)

Calculate  $378 \times 7$

$$\begin{array}{r} 378 \\ \times 7 \\ \hline 2646 \\ \hline 55 \end{array}$$

Calculate  $2378 \times 7$

$$\begin{array}{r} 2378 \\ \times 7 \\ \hline 16646 \\ \hline 255 \end{array}$$

Calculate  $78 \times 23$

$$\begin{array}{r} 78 \\ \times 23 \\ \hline 234 \quad (78 \times 3) \\ + 1560 \quad (78 \times 20) \\ \hline 1794 \end{array}$$

Calculate  $278 \times 23$

$$\begin{array}{r} 278 \\ \times 23 \\ \hline 834 \quad (278 \times 3) \\ + 5560 \quad (278 \times 20) \\ \hline 6394 \end{array}$$

### Year 6 Objectives

- To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
- To use their knowledge of the order of operations to carry out calculations involving the four operations
- To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- To solve problems involving addition, subtraction, multiplication and division
- To use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

### Vocabulary

common factors, multiples, prime, formal written method, multiply, multiplied by, multiple of, product, short and long multiplication, partition, scaling, decimal place, units, tenths and hundredths.

### Abstract

Formal Written Method (carrying can be above or below the equal sign)

Calculate  $78 \times 23$

$$\begin{array}{r} 78 \\ \times 23 \\ \hline 234 \quad (78 \times 3) \\ + 1560 \quad (78 \times 20) \\ \hline 1794 \end{array}$$

Calculate  $278 \times 23$

$$\begin{array}{r} 278 \\ \times 23 \\ \hline 834 \quad (278 \times 3) \\ + 5560 \quad (278 \times 20) \\ \hline 6394 \end{array}$$

Calculate  $5278 \times 23$

$$\begin{array}{r} 5278 \\ \times 23 \\ \hline 15834 \quad (5278 \times 3) \\ + 105560 \quad (5278 \times 20) \\ \hline 121394 \end{array}$$


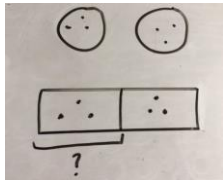
# Division

## EYFS Objectives

- Using quantities and objects to solve problems, including halving and sharing.

## Vocabulary

halve, half, share, share equally, groups

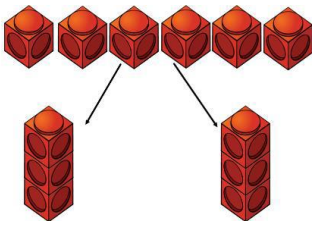
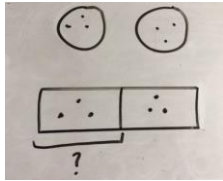
Concrete	Pictorial	Abstract
Use resources 	Sharing pictorially 	Write numbers 6 shared by 2 = 3 <div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 5px;"> <span style="border: 1px solid black; padding: 5px 15px;">3</span> <span style="border: 1px solid black; padding: 5px 15px;">3</span> </div>

## Year 1 Objectives

- To solve one-step problems involving division, by calculating the answer using concrete objects and pictorial representations with the support of the teacher.

## Vocabulary

halve, share, share equally, groups, equal groups of, divide, divided by, left, left over

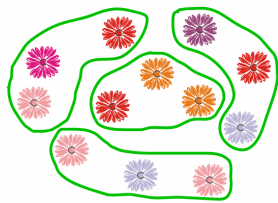



Concrete	Pictorial	Abstract
Use resources 	Sharing pictorially 	Write numbers 6 shared by 2 = 3 <div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 5px;"> <span style="border: 1px solid black; padding: 5px 15px;">3</span> <span style="border: 1px solid black; padding: 5px 15px;">3</span> </div>

## Year 2 Objectives

- To recall and use division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- To calculate mathematical statements for division within the multiplication tables and write them using the division ( $\div$ ) and equals (=) signs
- To show division of one number by another cannot
- To solve problems involving division, using materials, mental methods, and division facts, including problems in contexts.

## Vocabulary

groups of, equal groups of, halve, share, share equally, divide, divided by, divided into, repeated subtraction, inverse.

Concrete	Pictorial	Abstract
Grouping 	Bar Modelling   $24 \div 3 = ?$	Using a Number Line $24 \div 4 = 6$ 



### Year 3 Objectives

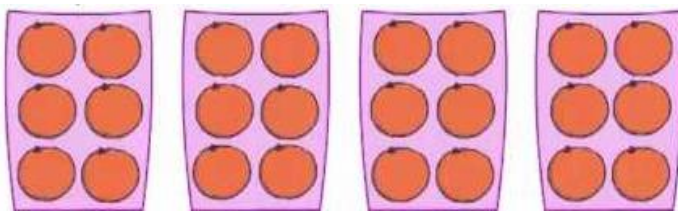
- To recall and use division facts for the 3, 4 and 8 multiplication tables
- To write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
- To solve problems, including missing number problems, involving division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

### Vocabulary

divided by, divide, divided into, grouping, divisor, short division, remainder, inverse.

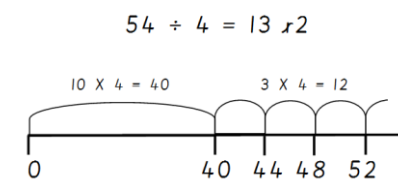
#### Concrete

##### Grouping



#### Abstract

##### Number Line



### Year 4 Objectives

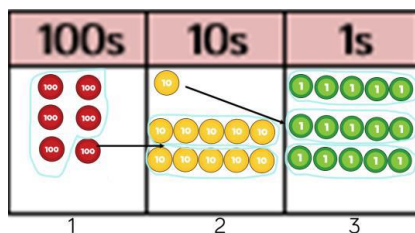
- To recall division facts for multiplication tables up to  $12 \times 12$
- To use place value, known and derived facts to divide mentally, including: dividing by 1;

### Vocabulary

factor, divisor, divided by, divided into, remainders, divisible by, equivalent, short division, derive, Quotient, inverse, remainder, multiples, exchange.

#### Concrete

##### Using Place Value Counters



#### Abstract

##### Short Division Method

$$564 \div 6 =$$
$$\begin{array}{r} 0 \ 9 \ 4 \\ 6 \overline{) 5 \ 6 \ 4} \\ \underline{6 \ 5 \ 6 \ 4} \end{array}$$

$$374 \div 3 =$$
$$\begin{array}{r} 1 \ 2 \ 4 \text{ r}2 \\ 3 \overline{) 3 \ 7 \ 4} \\ \underline{3 \ 7 \ 4} \end{array}$$

### Year 5 Objectives

- To divide numbers mentally drawing upon known facts
- To divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context
- To divide whole numbers and those involving decimals by 10, 100 and 1000



- To solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
- To solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

### Vocabulary

divide, divided by, divided into, divisible by, remainder, quotient, inverse, decomposing, factor, decimal place, units, tenths, scaling, short division.

### Abstract

#### Formal Written Method - Short Division

$$2564 \div 6 =$$

0	4	2	7	$\times 2$
6	2	<sup>2</sup> 5	<sup>1</sup> 6	<sup>4</sup> 4

$$4374 \div 9 =$$

0	4	8	6
9	4	<sup>4</sup> 3	<sup>7</sup> 4

### Year 6 Objectives

- To 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
- To 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
- To use their knowledge of the order of operations to carry out calculations involving the four operations
- To solve problems involving addition, subtraction, multiplication and division
- To use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

### Vocabulary

divide, divided by, divided into, divisible by, remainder, factor, quotient, inverse, decimal place, units, tenths, hundredths, scaling, formal written methods.

### Abstract

#### Formal Written Method - Short and Long Division

$$2564 \div 16 =$$

0	1	6	0	$\times 4$
16	2	<sup>2</sup> 5	<sup>9</sup> 6	4

$$2564 \div 16 =$$

0	1	6	0	$\times 4$
16	2	5	6	4
	1	6		
		9	6	4
		9	6	
			4	
			4	

$$2564 \div 16 =$$

0	1	6	0	$\times 4$
16	<del>2</del>	5	6	4
	- 1	6	0	0 <small>(<math>\times 100</math>)</small>
		0	9	6
	- 8	0	0	0 <small>(<math>\times 50</math>)</small>
		1	6	4
	- 1	6	0	0 <small>(<math>\times 10</math>)</small>
		0	0	4