



**Mrs Bland's Infant and Nursery School  
Burghfield Common Federation**

**Maths Calculation Policy**



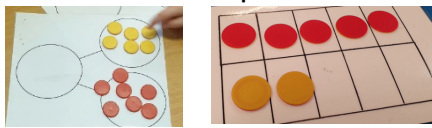



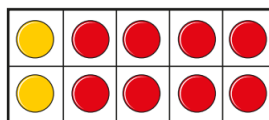
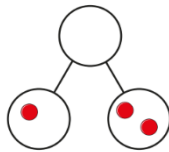
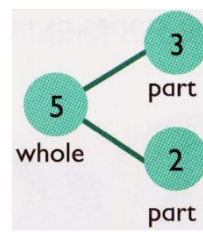
**October 2023**

# Mrs Bland's Infant and Nursery School

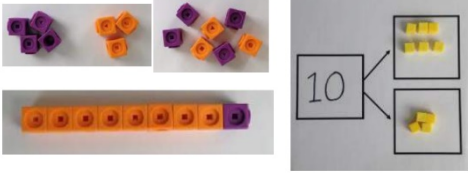
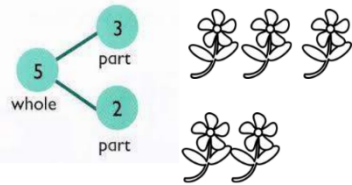
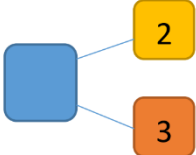
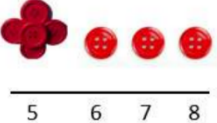

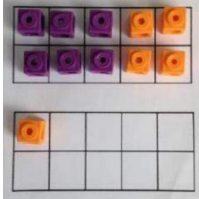
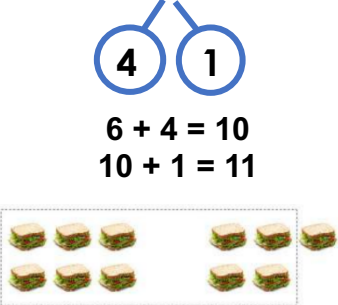
## Calculation Policy

This policy has largely been adapted from the White Rose Maths Hub calculation policy, with additional material added. It is intended to be a working document that is revised and amended as necessary.

This document is broken down into addition, subtraction, multiplication and division. It provides an overview of the different models and images that can be used to support the teaching of different concepts. A glossary of terms is provided at the end of the document to support understanding of key language used to teach the four operations.



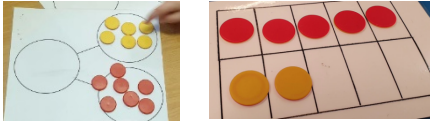

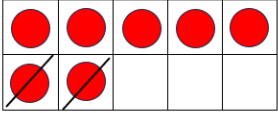
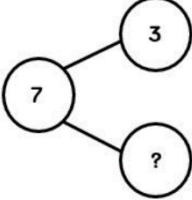
<b>Addition – EYFS</b>			
<b>Objectives</b>	<b>Concrete</b>	<b>Pictorial</b>	<b>Abstract</b>
<ul style="list-style-type: none"> <li>- Knows that a group of things change in quantity when something is added.</li> <li>- Find the total number of items in two groups by counting all of them.</li> <li>- Says the number that is one more than a given number.</li> <li>- Finds one more from a group of up to five objects, then ten objects.</li> <li>- In practical activities and discussion, beginning to use the vocabulary involved in adding.</li> <li>- Using quantities and objects, they add two single digit numbers and count on to find the answer.</li> <li>- Solve problems including doubling.</li> </ul>	<p style="text-align: center;">Use toys and general classroom resources for children to physically manipulate, group/regroup.</p> <div style="text-align: center;">  </div> <p style="text-align: center;">Use specific maths resources such as counters, snap cubes, Numicon etc.</p> <div style="text-align: center;">  </div> <p style="text-align: center;">Use visual supports such as ten frames, part-whole models and addition mats, with the physical objects and resources that can be manipulated.</p> <div style="text-align: center;">  </div>	<p style="text-align: center;">Two groups of pictures so children are able to count the total.</p> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <p style="text-align: center;">Use visual supports such as ten frames, part-whole models and addition mats with pictures/icons.</p> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div>	<p style="text-align: center;">A focus on symbols and numbers to form a calculation.</p> <p style="font-size: 1.2em; text-align: center;"><b>3 + 2 = 5</b></p> <div style="text-align: right;">  </div> <p style="text-align: center;">* No expectation for children to be able to record a number sentence/addition calculation.</p>

## Addition – Year 1

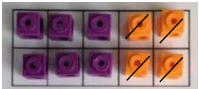
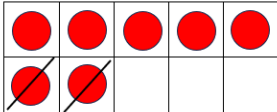

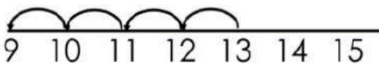



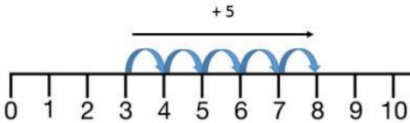
Objectives	Concrete	Pictorial	Abstract
<p>Number bonds of 5, 6, 7, 8, 9 and 10.</p>	<p>Use cubes to add two numbers together as a group or in a bar.</p> 	<p>Use pictures to add two numbers together as a group.</p> 	<p>Use the part-part-whole diagram as shown below to move into the abstract.</p> <p> <math>2 + 3 = 5</math>  <math>3 + 2 = 5</math>  <math>5 = 3 + 2</math>  <math>5 = 2 + 3</math> </p> 
<p>Counting</p>	<p>Start with the larger number and then count on the smaller number 1 by 1 to find the answer.</p> 	<p>Use a number line to count on in ones. Start at the larger number and then count on the smaller number 1 by 1 to find the answer.</p> 	<p>Record as a number sentence.</p> <p style="text-align: center;"><b><math>5 + 3 = 8</math></b></p>
<p>Regrouping to make 10.</p>	<p>Start with the bigger number and use the smaller number to make 10.</p> <p><math>6 + 5 = 11</math></p> 	<p><math>6 + 5 = 11</math></p> 	<p>Record as a number sentence.</p> <p style="text-align: center;"><b><math>6 + 5 = 11</math></b></p>



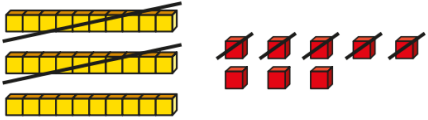
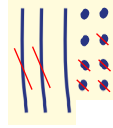
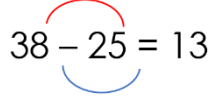
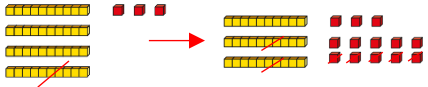
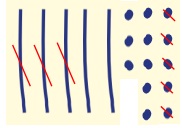
## Subtraction - EYFS

Objectives	Concrete	Pictorial	Abstract
<p>- Knows that a group of things change in quantity when something is taken away.</p> <p>- Find one less from a group of five objects, then ten objects.</p> <p>- In practical activities and discussion, beginning to use the vocabulary involved in subtracting.</p> <p>- Using quantities and objects, they subtract two single digit numbers and count back to find the answer.</p>	<p>Use toys and general classroom resources for children to physically manipulate, group/regroup.</p>  <p>Use specific maths resources such as counters, snap cubes, Numicon etc.</p>  <p>Use visual supports such as ten frames, part-whole and subtraction mats, with the physical objects and resources that can be manipulated.</p> 	<p>A group of pictures for children to cross out or cover quantities to support subtraction.</p>  <p>Use visual supports such as ten frames and part-whole models with pictures/icons.</p> 	<p>A focus on symbols and numbers to form a calculation.</p> <p><math>7 - 3 = 4</math></p>  <p>* No expectation for children to be able to record a number sentence/subtraction calculation.</p>



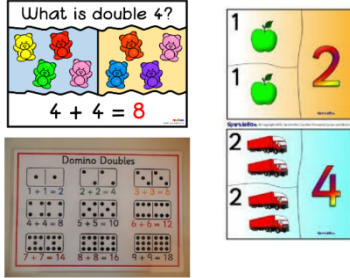
## Subtraction – Year 1

Objectives	Concrete	Pictorial	Abstract
Taking away ones.	<p>Use physical objects, counters, cubes etc. to show how objects can be taken away.</p>  <p style="text-align: center;"><b>10 – 4 = 6</b></p>	<p>Cross out drawn objects to show what has been taken away.</p> 	<p><b>7 – 2 = 5</b></p>
Counting back.	<p>Make the larger number in your subtraction, remove the objects 1 by 1 as you count backwards in ones.</p> 	<p>Using a number track. Start at the largest number in the question and jump back the smaller number.</p> 	<p>Put 13 in your head. Count back 4. What number are you at?</p> <p style="text-align: center;">Use fingers to help.</p>
Find the difference.	<p>Compare amounts and objects to find the difference.</p> <p>Mo </p> <p>Fay </p> <p>Use cubes to build towers or make bars to find the difference.</p> 	<p>Use a number line to count on to find the difference.</p> 	<p>Mo has 3 strawberries. Fay has 5 strawberries. Find the difference between the number of strawberries the children have.</p> <p style="text-align: center;"><b>5 – 3 = 2</b></p>


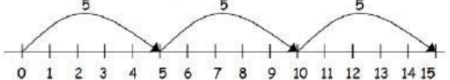

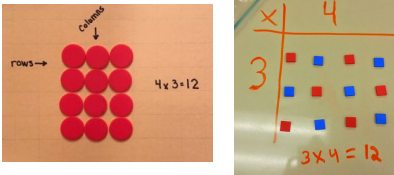


## Subtraction – Year 2

Objectives	Concrete	Pictorial	Abstract
Subtracting two two-digit numbers without regrouping.	<p>Use base 10 to make the largest number. Remove enough base 10 to represent the smaller number.</p> 	<p>After physically using base 10, children can draw the base 10 to help them solve the problems.</p> 	<p>Recognise and partition the tens and ones to be able to subtract them mentally.</p> $38 - 25 = 13$ 
Subtracting two two-digit numbers with regrouping.	<p>Use base 10 to make the largest number. Start by attempting to remove the ones. Exchange 1 ten for ten ones. Then remove the correct numbers of tens and ones to represent the smaller number.</p> <p style="text-align: center;"><math>43 - 25 =</math></p> 	<p>After physically using base 10, children can draw the base 10 to help them solve the problems.</p> 	<p>Start with the largest number. Subtract the tens, then subtract the ones.</p> $43 - 25 =$ $43 - 20 = 23$ $23 - 5 = 18$

## Multiplication – EYFS

Objectives	Concrete	Pictorial	Abstract
- Solve problems including doubling	<p>Counting and other maths resources for children to make 2 equal groups.</p>  <p>Physical and real life examples that encourage children to see concept of doubling as adding two equal groups.</p> 	<p>Pictures and icons that encourage children to see concept of doubling as adding two equal groups.</p> 	<p>Addition calculations to model adding two equal groups.</p> $1 + 1 = \quad 6 + 6 =$ $2 + 2 = \quad 7 + 7 =$ $3 + 3 = \quad 8 + 8 =$ $4 + 4 = \quad 9 + 9 =$ $5 + 5 = \quad 10 + 10 =$

**Multiplication – Years 1 and 2**

Objectives	Concrete	Pictorial	Abstract
<p>Repeated addition.</p>	<p>Use different objects to add equal groups.</p> 	<p>Draw pictures to represent adding equal groups.</p> <p>★ ★ + ★ ★ + ★ ★ + ★ ★</p> <p>Use a number line to represent adding equal groups.</p> 	<p>Write addition sentences to describe objects and pictures.</p>  <p><b>2 + 2 + 2 = 6</b></p>
<p>Arrays – showing commutative multiplication.</p>	<p>Create arrays using counters/cubes to show multiplication sentences.</p> 	<p>Draw arrays in different rotations to find commutative multiplication sentences.</p>  <p><math>2 \times 4 =</math>                      <math>4 \times 2 =</math></p>	<p>Use an array to write multiplication sentences and reinforce repeated addition.</p>  <p><math>3 \times 5 = 15</math>    <math>5 + 5 + 5 = 15</math>  <math>5 \times 3 = 15</math>    <math>3 + 3 + 3 + 3 + 3 = 15</math></p>




**Division – EYFS**

**Objectives**


- Solve problems including halving and sharing.
- Halving a whole, halving a quantity of objects.
- Sharing a quantity of objects

**Concrete**


Children have the opportunity to physically cut objects, food or shapes in half.



Counting and other maths resources for children to share into two equal groups.

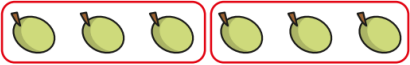


Use counting and other maths resources for children to explore sharing between 3 or more.




**Pictorial**

Pictures and icons that encourage children to see concept of halving in relation to subitising, addition and subtraction knowledge. i.e., Knowing 6 is made of 2 groups of 3, so half of 6 is 3.





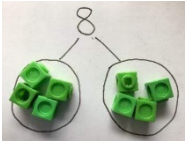
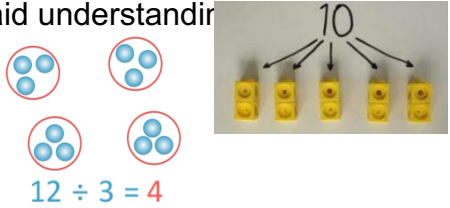
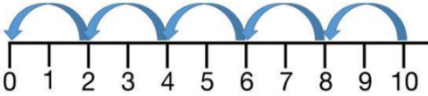
Pictures for children to create and visualise 3 or more equal groups.



**Abstract**

None.

## Division – Years 1 and 2

Objectives	Concrete	Pictorial	Abstract
Sharing.	<p>Sharing resources equally between a number of people.</p> 	<p>Children use pictures or shapes to share quantities.</p> 	<p>Write division number sentences to represent sharing objects equally.</p>  <p style="text-align: center;"><b><math>8 \div 2 = 4</math></b></p>
Grouping.	<p>Divide quantities into equal groups. Use cubes, counters or objects to aid understanding.</p>  <p style="text-align: center;"><b><math>12 \div 3 = 4</math></b></p>	<p>Use a number line to show jumps in groups. The number of jumps equals the number of groups.</p> 	<p>Write division number sentences to represent grouping objects.</p> <p style="text-align: center;"><b><math>10 \div 2 = 5</math></b></p>

## Glossary

<b>Addend</b>	A number to be added to another.	<b>Aggregation</b>	Combining two or more quantities or measures to find a total.
<b>Augmentation</b>	Increasing a quantity or measure by another quantity.	<b>Commutative</b>	Numbers can be added in any order.
<b>Complement</b>	In addition, a number and its complement make a total. E.g. 3 is the complement to 7 to make 10.	<b>Difference</b>	The numerical difference between two numbers is found by comparing the quantity in each group.
<b>Exchange</b>	Change a number or expression for another of an equal value.	<b>Minuend</b>	A quantity or number from which another is subtracted.
<b>Partitioning</b>	Splitting a number into its component parts.	<b>Reduction</b>	Subtraction as a take away.
<b>Subitise</b>	Instantly recognise the number of objects in a small group without needing to count.	<b>Subtrahend</b>	A number to be subtracted from another.
<b>Sum</b>	The result of an addition.	<b>Total</b>	The aggregate or the sum found by addition.