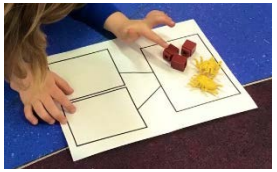
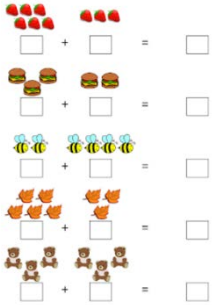
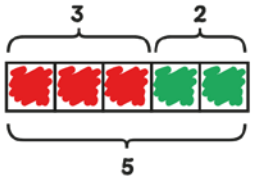
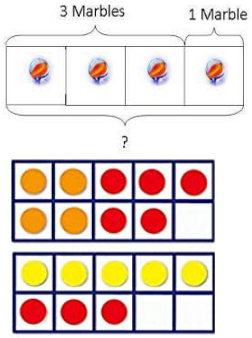
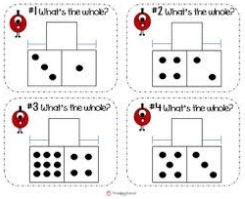
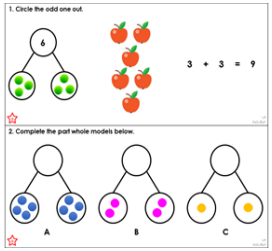
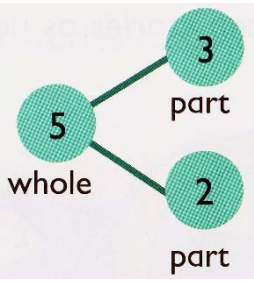
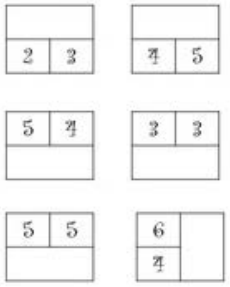
Broomhill Infant School

Calculation Policy

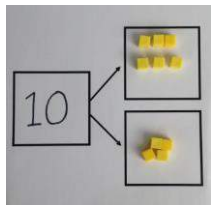
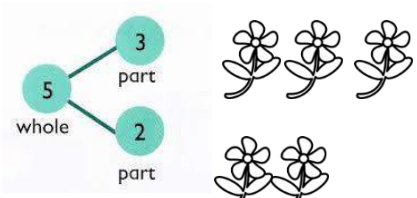
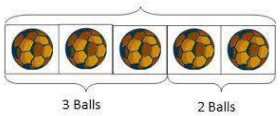
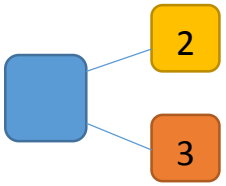
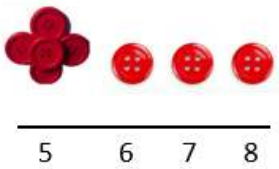
This policy has largely been adapted from the White Rose Maths Hub calculation policy with additional material added. It is a working document and will be revised and amended as necessary

MathsHUBS White Rose

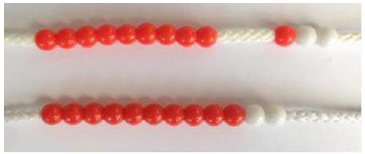
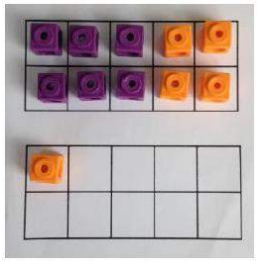
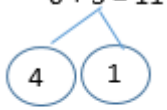
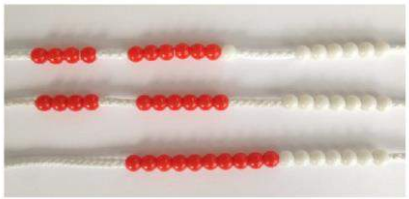
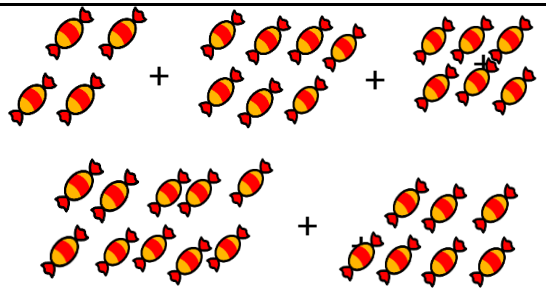
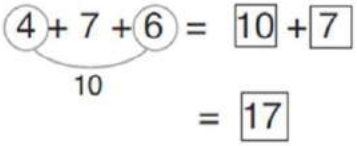
Addition- EYFS

Objectives	Concrete	Pictorial	Abstract
- Knows that a group of things change in quantity when something is added. - Find the total number of items in two groups by counting all of them. - Says the number that is one more than a given number. - Finds one more from a group of up to five objects, then ten objects. - In practical activities and discussion, beginning to use the vocabulary involved in adding. - Using quantities and objects, they add two single digit numbers and count on to find the answer. - Solve problems including doubling.	   Use toys and general classroom resources for children to physically manipulate, group/regroup.  Use specific maths resources such as counters, snap cubes, Numicon etc.    Use visual supports such as ten frames, part part whole and addition mats, with the physical objects and resources that can be manipulated.	  Two groups of pictures so children are able to count the total.  Bar model using visuals, pictures/icons or colours.  Use visual supports such as ten frames, part part whole and addition mats with pictures/icons.  	A focus on symbols and numbers to form a calculation. $5+2=7$   * No expectation for children to be able to record a number sentence/addition calculation.

CALCULATION GUIDANCE: Addition

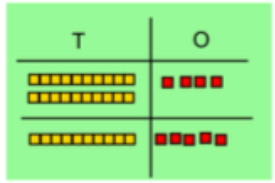
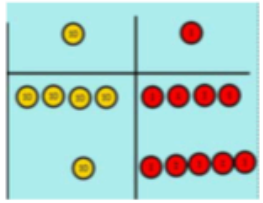
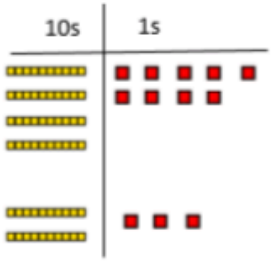
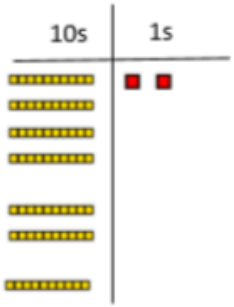
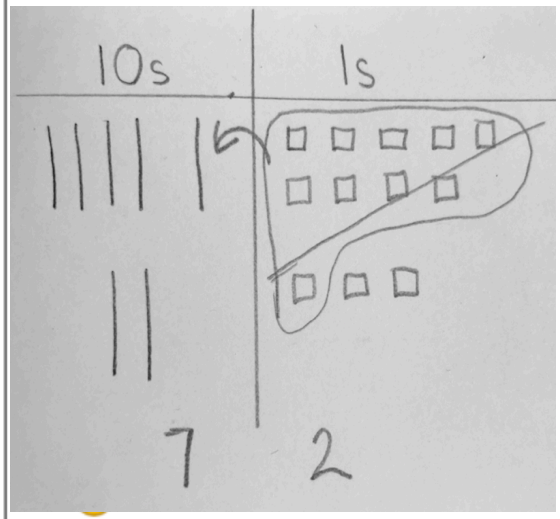
	Objective	Concrete	Pictorial	Abstract
Year 1	Number bonds of 5, 6, 7, 8, 9 and 10	  Use cubes to add two numbers together as a group or in a bar. 	  Use pictures to add two numbers together as a group or in a bar. 	2 + 3 = 5 3 + 2 = 5 5 = 3 + 2 5 = 2 + 3  Use the part-part-whole diagram as shown above to move into the abstract.
	Counting	 Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer. 	Use a number line to count on in ones. 	5 + 3 = 8

CALCULATION GUIDANCE: Addition

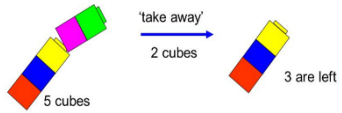
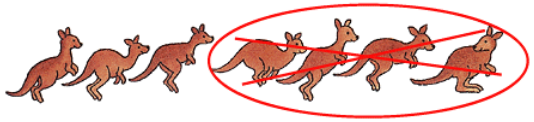
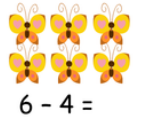
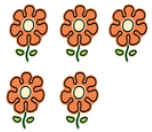
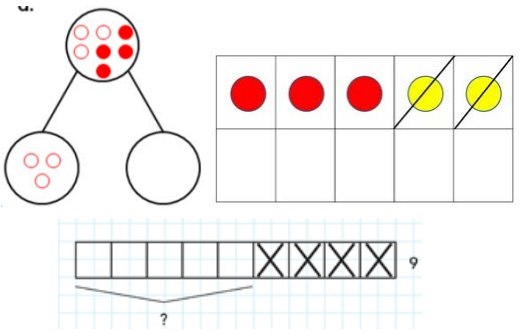
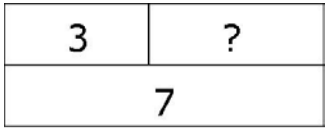
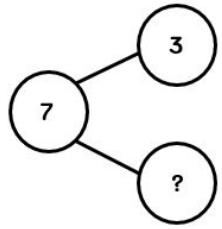
	Objective	Concrete	Pictorial	Abstract
Year 1	Regrouping to make 10	  6 + 5 = 11 Start with the bigger number and use the smaller number to make 10.	 6 + 5 = 11  6 + 4 =10 10 + 1 = 11	6 + 5 = 11
Year 2	Adding 3 single digit numbers	4 + 7 + 6= 17 Put 4 and 6 together to make 10. Add on 7.  Following on from making 10, make 10 with 2 of the digits (if possible) then add on the third digit.	 Add together three groups of objects. Draw a picture to recombine the groups to make 10.	 Combine the two numbers that make 10 and then add on the remainder.

CALCULATION GUIDANCE: Addition

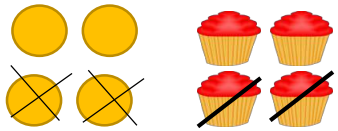
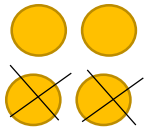
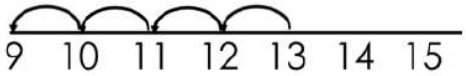
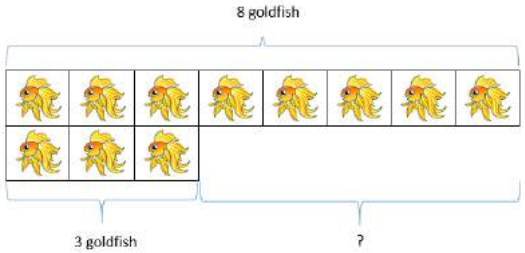
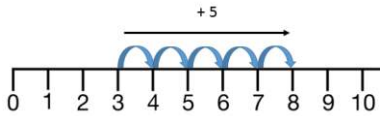
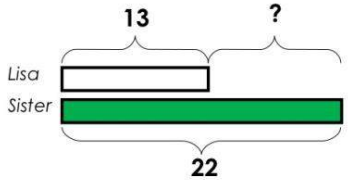
MathsHUBS Surrey Plus

	Objective	Concrete	Pictorial	Abstract
Year 2	Column method without regrouping	Add together the ones first, then add the tens. Use the Base 10 blocks first before moving onto place value counters. 24 + 15 =  44 + 15 = 	After physically using the base 10 blocks and place value counters, children can draw the counters to help them to solve additions.  	24 + 15 = 39 24 + 15 39
	Column method with regrouping	Make both numbers on a place value grid.  Add up the units and exchange 10 ones for 1 ten.  	Using Base 10 blocks, children can draw the blocks to help them solve the additions.  	49 + 23 = 72 40 + 20 = 60 9 + 3 = 12 49 + 23 72

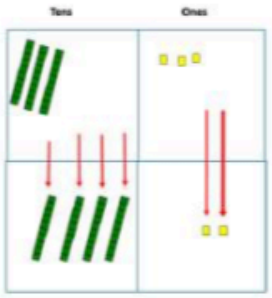
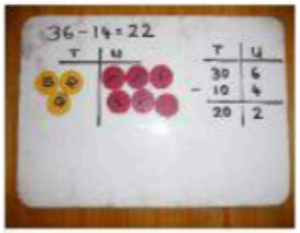
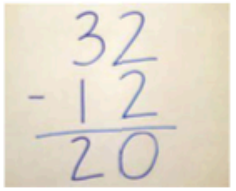
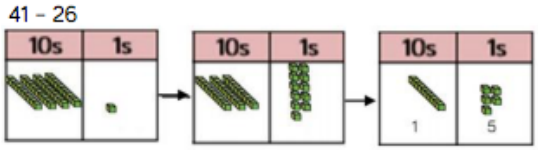
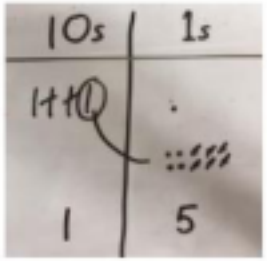
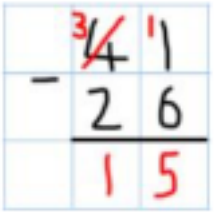
Subtraction- EYFS

Objectives	Concrete	Pictorial	Abstract
- Knows that a group of things change in quantity when something is taken away - Find one less from a group of five objects, then ten objects. - In practical activities and discussion, beginning to use the vocabulary involved in subtracting. - Using quantities and objects, they subtract two single digit numbers and count back to find the answer.	   Use toys and general classroom resources for children to physically manipulate, group/regroup.    Use specific maths resources such as snap cubes, Numicon, bead strings etc.   Use visual supports such as ten frames, part part whole and subtraction mats, with the physical objects and resources that can be manipulated.	     A group of pictures for children to cross out or cover quantities to support subtraction.  Use visual supports such as ten frames, part part whole and bar model with pictures/icons.	A focus on symbols and numbers to form a calculation.  10 - 6 = 4  7 - 3 = ?  * No expectation for children to be able to record a number sentence/addition calculation.

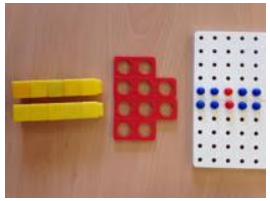
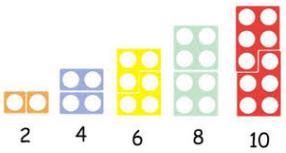
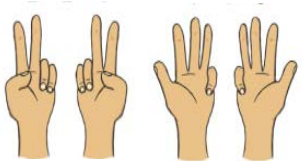
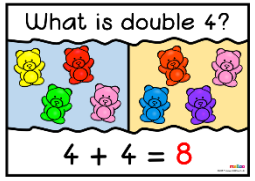
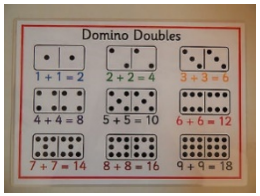
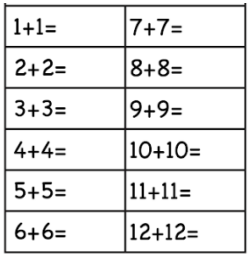
CALCULATION GUIDANCE: Subtraction

	Objective	Concrete	Pictorial	Abstract
Year 1	Taking away ones	Use physical objects, counters, cubes etc. to show how objects can be taken away. 4 – 2 = 2 	Cross out drawn objects to show what has been taken away. 4 – 2 = 2 	4 – 2 = 2
	Counting back	Make the larger number in your subtraction. Move the beads along your bead string as you count backwards in ones.  13 – 4 = 9	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.	Put 13 in your head, count back 4. What number are you at? Use your fingers to help.
	Find the difference	Compare amounts and objects to find the difference.  Use cubes to build towers or make bars to find the difference. Use basic bar models with items to find the difference.	 Count on to find the difference. *Lisa is 13 years old. Her sister is 22 years old. Find the difference in age between them.*  Draw bars to find the difference between 2 numbers.	Hannah has 8 goldfish. Helen has 3 goldfish. Find the difference between the number of goldfish the girls have.

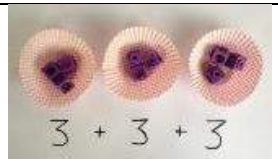
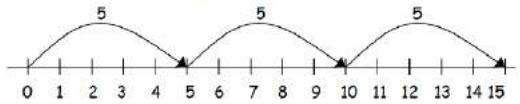
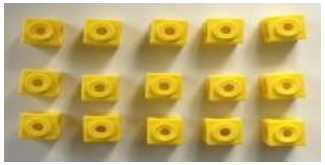
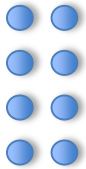
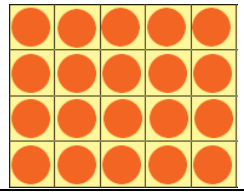
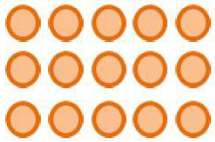
CALCULATION GUIDANCE: Subtraction

	Objective	Concrete	Pictorial	Abstract
Year 2	Column method without regrouping	75 – 42 = 33  Use Base 10 to make the bigger number then take the smaller number away. Show how you partition numbers to subtract. Again make the larger number first. 	 Draw the Base 10 or place value counters alongside the written calculation to help to show working.	This will lead to a clear written column subtraction. 
Year 2	Column method with regrouping	Use Base 10 to practise exchanging one ten for ten ones. 	Draw the Base 10 remembering to show the exchange. 	Formal column method. Children need to understand that this represents 30 + 11 and that there are still 41. 

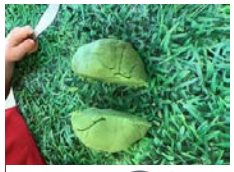
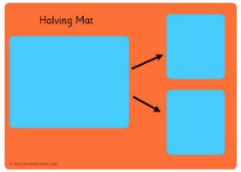
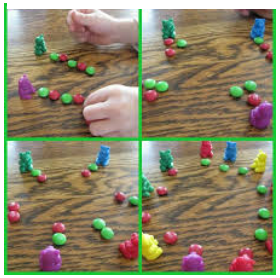
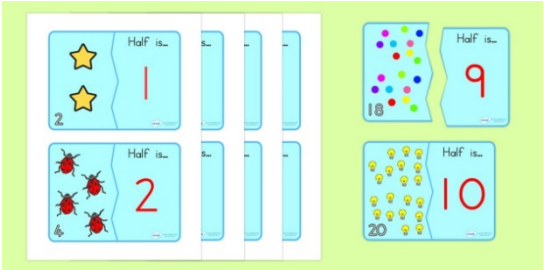
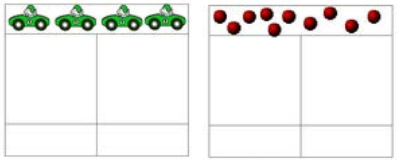
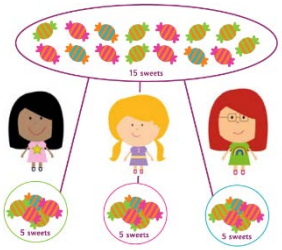
Multiplication-EYFS

Objectives	Concrete	Pictorial	Abstract
- Solve problems including doubling	   Counting and other maths resources for children to make 2 equal groups.    Physical and real life examples that encourage children to see concept of doubling as adding two equal groups.	    Pictures and icons that encourage children to see concept of doubling as adding two equal groups.	 Addition calculations to model adding two equal groups.

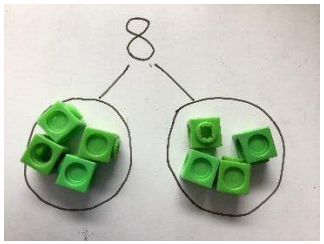
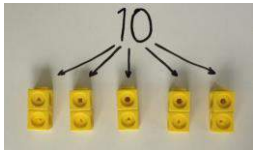
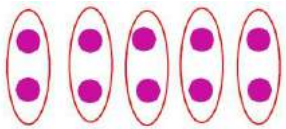
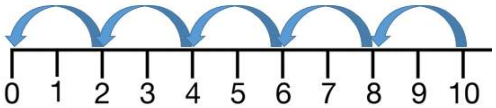
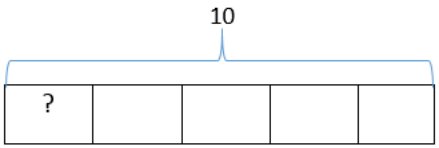
CALCULATION GUIDANCE: Multiplication

	Objective	Concrete	Pictorial	Abstract
Year 1/2	Repeated addition	   Use different objects to add equal groups.	There are 3 plates. Each plate has 2 star biscuits on. How many biscuits are there?  2 + 2 + 2 = 6  5 + 5 + 5 = 15	Write addition sentences to describe objects and pictures.  2 + 2 + 2 = 6
	Arrays- showing commutative multiplication	Create arrays using counters/cubes to show multiplication sentences.  	Draw arrays in different rotations to find **commutative** multiplication sentences.  4 × 2 = 8 2 × 4 = 8  2 × 4 = 8 4 × 2 = 8 Link arrays to area of rectangles. 	Use an array to write multiplication sentences and reinforce repeated addition.  5 + 5 + 5 = 15 3 + 3 + 3 + 3 + 3 = 15 5 x 3 = 15 3 x 5 = 15

Division- EYFS

Objectives	Concrete	Pictorial	Abstract
Solve problems including halving and sharing. • Halving a whole, halving a quantity of objects. • Sharing a quantity of objects.	   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 visual supports such as halving mats and part part whole, with the physical objects and resources that can be manipulated.  Counting and other maths resources for children to explore sharing between 3 or more.	 Pictures and icons that encourage children to see concept of halving in relation to subitising, addition and subtraction knowledge. i.e. Knowing 4 is made of 2 groups of 2, so half of 4 is 2.  Bar model with pictures or icons to support understanding of finding 2 equal parts of a number, to further understand how two halves make a whole.  Pictures for children to create and visualise 3 or more equal groups.	

CALCULATION GUIDANCE: Division

	Objective	Concrete	Pictorial	Abstract
Year 1/2	Sharing	I have 8 cubes, can you share them equally between two people?	Children use pictures or shapes to share quantities.  8 ÷ 2 = 4	Share 8 buns between two people. 8 ÷ 2 = 4 
	Grouping	Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.  	Use a number line to show jumps in groups. The number of jumps equals the number of groups.  0 1 2 3 4 5 6 7 8 9 10 Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be within each group.  10 ? 10 ÷ 5 = ? 5 x ? = 10	10 ÷ 5 = 2 Divide 10 into 5 groups. How many are in each group?