Calculation Policy

Broadway Maths Vision: At Broadway, our vision for maths is creating confident mathematicians who enjoy exploring new challenges, problem solving and talking about their learning in meaningful and practical ways.

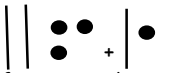
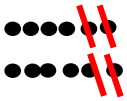
The national curriculum for mathematics aims to ensure that all pupils:

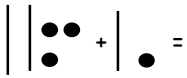
- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.

- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language

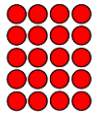
- can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

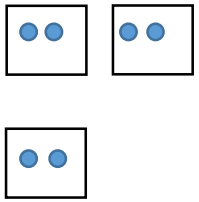
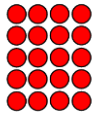
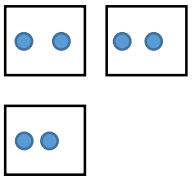
Addition and Subtraction

Reception Objectives	Mental calculation	Concrete resources	Pictorial representations	Abstract	Vocabulary
30-50mths- represent numbers using fingers, marks on paper or pictures. Compares two groups of objects. Separates a group of objects in different ways. 40-60mths- Uses the language of more and fewer to compare two sets of objects. 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. Find one more or one less from a group of up to 5 objects, then ten objects. In practical activities and discussion, begin to use the vocabulary involved in addition and subtraction. ELG: Using quantities and objects, add and subtract two single digit numbers and count on or back to find the answer.	Counting on using nose tap and fingers.	Dienes, money, objects, cubes/counters, pens, natural dominoes, toys, natural and manmade materials, inside and outside equipment. Iconic- number line, numicon, dice	Draw objects e.g. oranges or use stickers.	Use of + and – and = symbols.	add total altogether plus and together calculation subtract minus take away difference between
Year One Objectives	**Mental calculation**	**Concrete resources**	**Pictorial representations**	**Abstract**	**Vocabulary**
-read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs -represent and use number bonds and related subtraction facts within 20 add and subtract one-digit and two-digit numbers to 20, including zero -solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = – 9.	Number bonds 5, 10, 20 Counting on and back within 100. Addition and subtraction facts within 20. Put number in head and count on/back using fingers (put fingers up to start with). (Number ladder and addition and subtraction ladder)	Dienes, bead strings, money, objects, cubes/counters Iconic- number line, 100 square, numicon, dice	 If crossing the tens, draw the tens and ones together for the answer and put a circle around the ones that make a ten. 	**Single digits** 5+4= 8+6= crossing tens **One 2 digit number and a single digit.** 17+2= 17+6= crossing tens **Two 2 digit numbers** 23+14= 23+29= crossing tens Put number in head, put fingers up and then count them down. As above for subtraction.	add total altogether plus and together calculation subtract minus take away difference between

Year Two Objectives					
-read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs -represent and use number bonds and related subtraction facts within 20 add and subtract one-digit and two-digit numbers to 20, including zero -solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = – 9.	Number bonds to 5, 10, 20, 50 and 100. Addition and Subtraction facts within 20. Put number in head and count on/back using fingers (put fingers up to start with).	Dienes, bead strings, numicon, money, objects, cubes/counters	**Drawing tens and ones for addition**  When crossing the tens, exchange tens ones for a ten stick. **Partitioning** 35+23= 30+20=50 5+3=8 50+8=58 Towards the end of the year and for those that are ready… **Column addition (no exchange)** 23 + 14 _____ **Empty number line for subtraction** (jump back the tens then the ones.) 	Two digit number and ones 54+3= 54+8= Two digit number and tens 37+10= 51+20= 29+30= Two 2 digit numbers 34+23= 47+58= Three one digit numbers 7+4+2= Put number in head, put fingers up and then count them down. As above for subtraction	add total altogether plus and together calculation subtract minus take away difference between

Multiplication and Division

Reception Objectives	Mental calculation	Concrete resources	Pictorial representations	Abstract	Vocabulary
30-50mths: Compares two groups of objects. Separates a group of objects in different ways. ELG: solve problems including doubling, halving and sharing.	Counting in twos, fives and tens.	Practical resources e.g toys, socks, shoes, animal legs, legs on a minibeast, starfish etc… Sharing e.g toys in fields (only practical). Halving e.g. cakes and pizzas or 6 sweets etc…	Drawing pictures of items.	NO SYMBOLS	"lots of" "group of"
Year One Objectives	**Mental calculation**	**Concrete resources**	**Pictorial representations**	**Abstract**	**Vocabulary**
solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. Objective???	Counting in 2s, 5's and 10s	Cubes, counters, objects, numicon, money, food, fingers	Multiplication  Repeated addition  arrays  groups (circles) Draw dots	5+5+5=15 4x5=20 3x2=6	multiply groups of lots of times times tables total altogether repeated addition array

			Division  (squares)	6÷3=2	divide share groups
Year Two Objectives					
Pupils should be taught to: recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.	Count in 2's, 5's, 10s and 3s. Learn times tables in order. Learn times tables facts in mixed order. Knowledge of doubles and halves	Cubes, counters, objects, numicon, money, food, fingers	Multiplication  Repeated addition  arrays  groups (circles) Draw dots or write the number in each circle.	5+5+5=15 4x5=20 5x4=20 3x2=6 2x3=6	multiply groups of lots of times times tables total altogether repeated addition array
	Related division facts Knowledge of doubles and halves		Division  (squares)	6÷3=2	divide share groups