Hugglescote Calculation Policy

Progression in Calculations at Hugglescote- reviewed 2021 (with reference to 2020 Ready to Progress Government Guidance and other local schools)

Number and Place Value
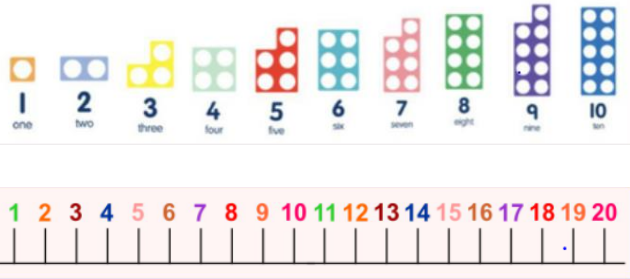
Objective and link to RTP criteria	Concrete	Pictorial	Abstract
Recognise numbers to 5 and then 10 using subitising	Children join in with counting songs representing numbers on fingers. Children are shown groups of objects to subitise e.g. 4 buttons is 2 parts and 2 parts Children explore Numicon and learn to recognise each number	Children are shown visual representations to aid with fluency of recall and subitising.	Children understand what a 5 frame and then a 10 frame represents and can use objects on frames and pictures of frames to recognise numbers. Children can chat about the 'odd one out' in a group of pictures and explain why it is odd.

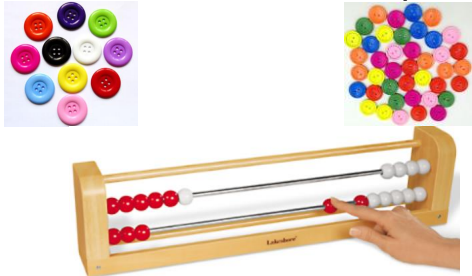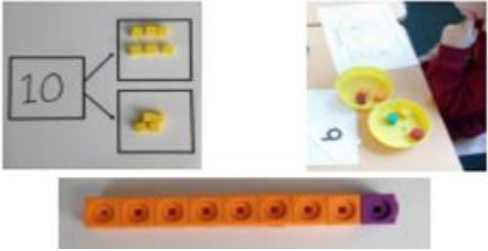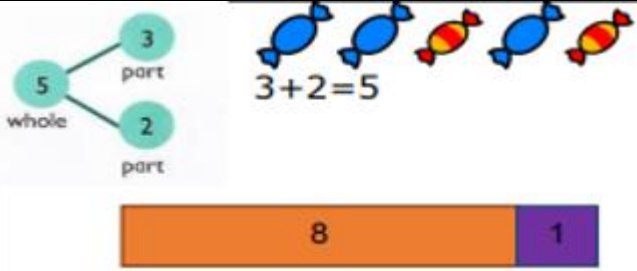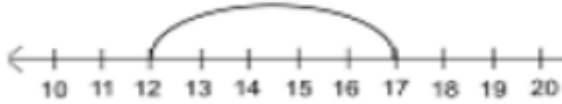|			
Counting forward and back in 1s within 10 then 20	Children count objects accurately with 1:1 correspondence	Children use visual representations and number lines to aid counting forward and back in 1s.	Children can count forward and back in 1s without a visual aid.
Compare numbers to 10 then to 20 using < > =	Children can compare groups of objects and are taught to use the language of greater than, less than and equals.	Children are introduced to the symbols for greater than, less than and equals and learn how to use them to compare objects and pictures of objects.	Children begin to use symbols to record e.g. 3 < 10
Read and write numbers to 20	Children can recognise numbers with pictures of what they represent next to them. Children explore writing numbers in paint, sand on whiteboards to build confidence.	Children can recognise numbers on their own and match them to groups of objects or pictures of groups of objects. Children trace numbers over laminated sheets to improve accuracy.	Children write numbers accurately and reread what they have written. Children can label groups of objects themselves with a number to show how many
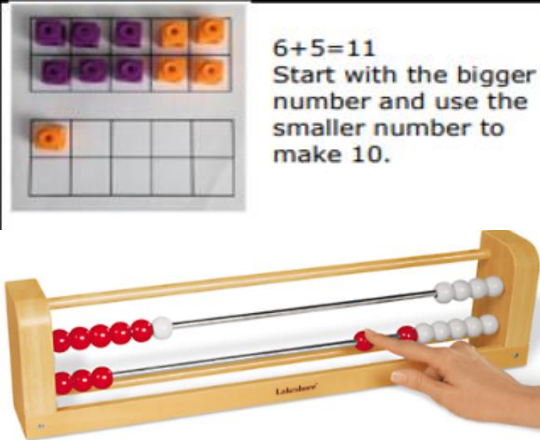
Addition and Subtraction
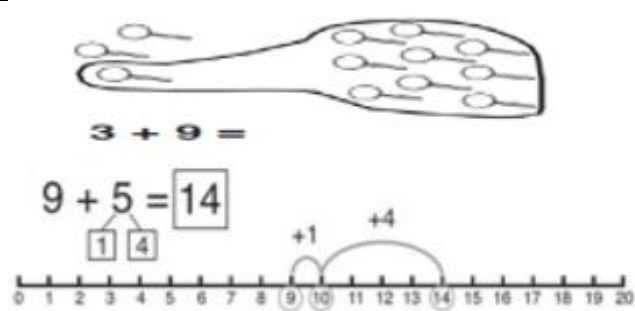
Objective and link to RTP criteria	Concrete	Pictorial	Abstract
Combining 2 groups to make a whole EYFS–Counting sets of objects, combining them recounting using 1:1 correspondance		3+2=5	4 + 3 = 7 I have 4 apples and I pick 3 more, how many have I got altogether?
Counting on EYFS–Pupils should be taught to start with the biggest number and count on (they should begin to understand addition can be done in any order			5 + 12 = 17 Reinforce starting from the largest number. 7 + 3 = 10 Encourage recall of known number facts to develop fluency in mental calculations.

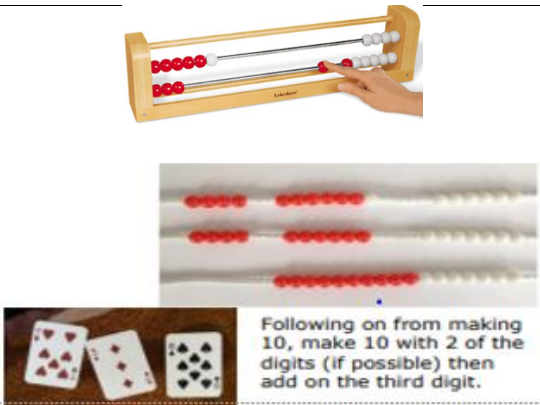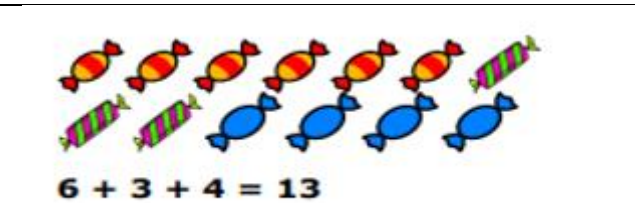|			
Regrouping to make 10 EYFS–Once secure counting on children can use knowledge of number bonds to bridge to 10 e.g. 4 + 6 = 10	6+5=11 Start with the bigger number and use the smaller number to make 10.	$3 + 9 =$ $9 + 5 = \boxed{14}$ $\boxed{1}\ \boxed{4}$ $+1$ $+4$ 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	7p+4p=11p I have 7p, how much more do I need to make 10p. How much more do I add on now? If you know 10=7+3, what else do you know?
Adding 3 single digits EYFS–Apply knowledge of number bonds and doubles and develop fluent recall of these facts	Following on from making 10, make 10 with 2 of the digits (if possible) then add on the third digit.	$6 + 3 + 4 = 13$	$\boxed{4} + 7 + \boxed{6} = \boxed{10} + \boxed{7}$ 10 $= \boxed{17}$
Taking away ones EYFS–Use objects to show how something can be taken away. Move on to crossing out representations	5 - 1 =	$4 - 2 = 2$ $5 - 3 = 3$ $15 - 3 = \boxed{12}$ $23 - 1 = 12$	18 -3= 15 8 – 2 = 6 There are 15 cakes in the shop. One cake is eaten, how many are left.
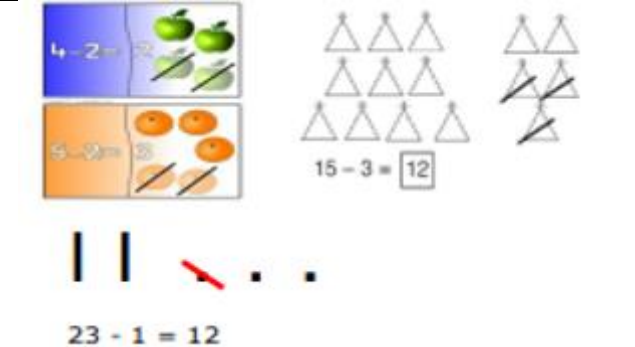
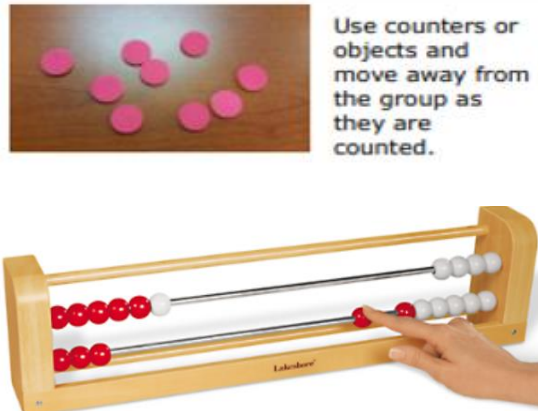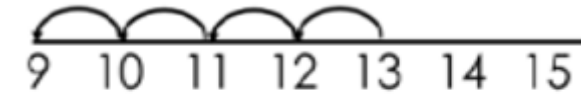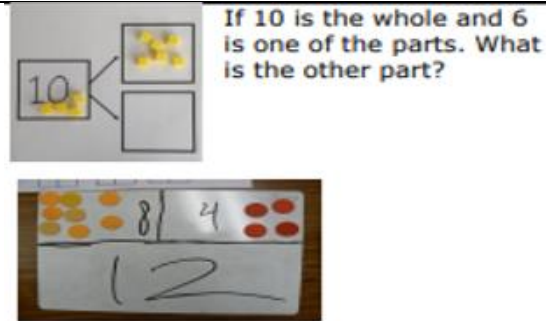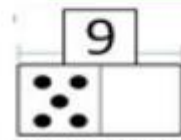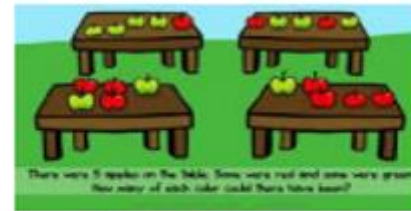| Counting back EYFS–Children are taught to count back to subtract smaller numbers from larger numbers	Use counters or objects and move away from the group as they are counted. 	 $13-4=9$	Put 17 in your head, count back 5. What number are you at? Use your fingers to help.
Children learn to use the Part, Part whole model EYFS–Children are taught to use this model to explore the inverse relationship between addition and subtraction	If 10 is the whole and 6 is one of the parts. What is the other part?	 Children should be taught the skills to approach problems in a systematic way.	I made 9 buns for the cake sale and I only had 2 left at the end. How many did I sell? $9-2= ?$
Make 10 EYFS–Children subtract a single digit number from a 2 digit number identifying how many need to be taken away to make 10 first	 $14-5=9$ Make 14 on the ten frame or with different coloured cubes to represent the ten and the ones. Take away the four first to make 10 and then takeaway one more so you have taken away 5. You are left with the answer of 9. 	$13 - 7 = \boxed{6}$ 	$15 - 7=$ How many do we subtract to reach the next 10? How many do we have left to subtract?
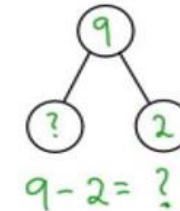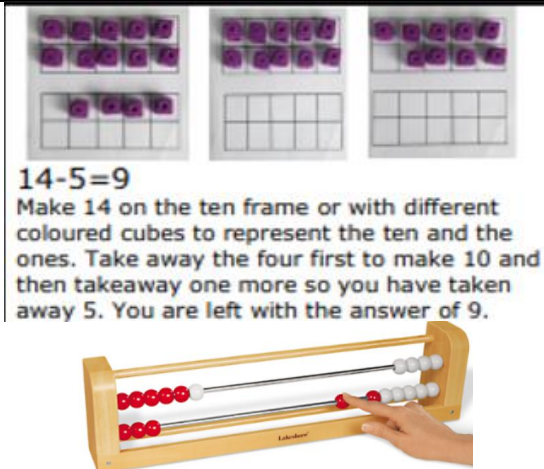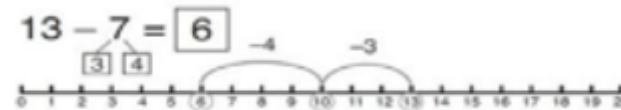
Find the difference

EYFS–Children should develop a good understanding that this can be done by comparing numbers
They should begin to understand inverse relationships

Practical resources to visualise 'difference' and recognise inverse relationships e.g. 12-1=11 and 11+1=12

Comparison Bar Models

Lisa is 13 years old. Her sister is 22 years old. Find the difference in age between them.

$74 - 57 =$
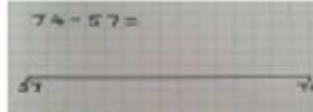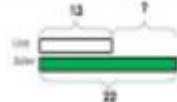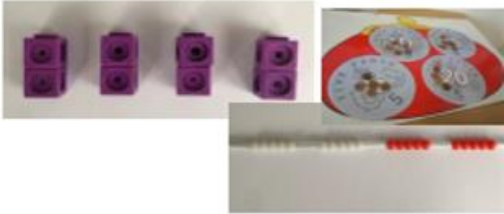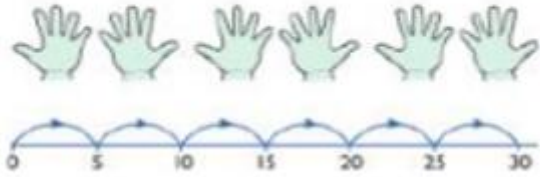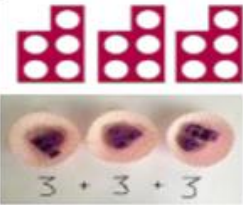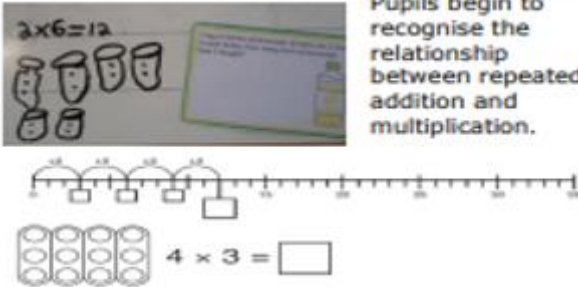
Use a blank number line to count back and count up between 2 numbers.

Lexie has 5 more strawberries than Jake. Jake has 11 cherries. How many does Lexie have?

Look at the graph. Fewer children have green eyes than blue. What is the difference?

Multiplication and Division

Objective and link to RTP criteria	Concrete	Pictorial	Abstract
Doubling EYFS–Children learn doubles to 20 and begin to link this to the 2x table		Double 4 is 8 	$2\times2=4$ $3\times2=6$ $2\times5=10$ If I can see 10 wheels, how many bikes are there?
Counting in multiples of 2, 5 and 10 EYFS–Children learn to count in 2s,5s and 10s		Use a number line or pictures to continue support in counting in multiples. 	Count in multiples of a number aloud. Write sequences with multiples of numbers and work out missing numbers in sequences both forward and backward. If I count in 2's will I get to the number 58?
Repeated addition EYFS–Children apply skip counting to repeatedly add	$5+5+5=15$ $3+3+3=9$	$2\times6=12$ Pupils begin to recognise the relationship between repeated addition and multiplication. $4 \times 3 = \square$	Write addition or multiplication sentences to describe objects and pictures. $2+2+2+2+2=10$ $2\times5=10$

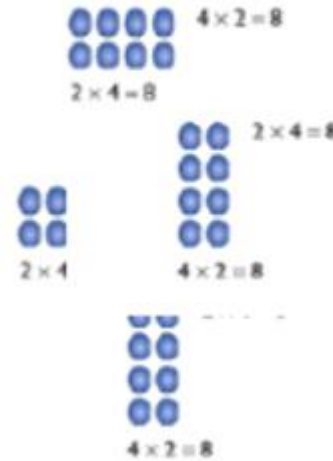|			
Arrays showing multiplication is commutative EYFS–Children should explore arrays to see how multiplication can be done in any order	 $3 \times 5 = 15$ $5 \times 3 = 15$ $15 \div 3 = 5$ $15 \div 5 = x$ 	Draw arrays in different rotations to find **commutative** multiplication sentences. $4 \times 2 = 8$ $2 \times 4 = 8$ $2 \times 4 = 8$ 10X5=50 2×4 $4 \times 2 = 8$ $4 \times 2 = 8$	3 children go to the park to hunt for pine cones. They find 5 each, how many do they find altogether? 5 children eat the same number of cakes at a party. 15 cakes are eaten in total, how many did they each eat? 5+5+5=15 3x5=15 3+3+3+3+3=15 5x3=15
Sharing EYFS–Division is explained as sharing		 $6 \div 2 = 3$	Share 9 buns between three people. $9 \div 3 = 3$ Can you make up your own 'sharing' story and record a matching equation?
Division as grouping EYFS–Division is showed as grouping an amount. This demonstrates its relationship with multiplication	 10 Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.	Show jumps in groups. The number of jumps equals the number of groups. 0 1 2 3 4 5 6 7 8 9 10 11 12 3 3 3 3 20 $20 \div 5 = ?$ $5 \times ? = 20$ 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.	$28 \div 7 = 4$ Divide 28 into 7 groups. How many are in each group? Max is filling party bags with sweets. He has 20 sweets altogether and decides to put 5 in every bag. How many bags can he fill?
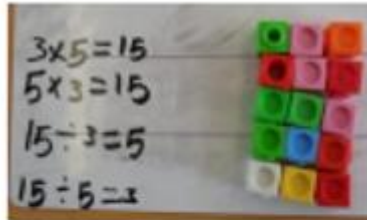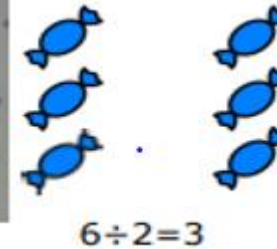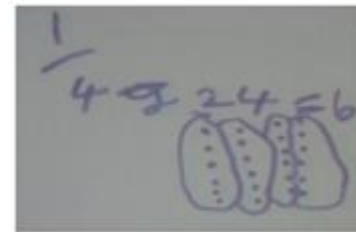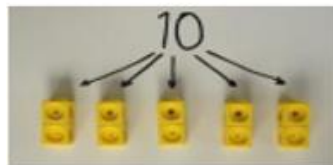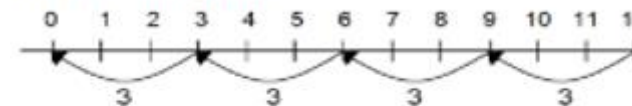
Division within arrays			
Division within arrays EYFS–Use arrays to find division equations		Write the division equations that the array represents. $20 \div 4 = \boxed{}$ $20 \div 5 = \boxed{}$	Children can draw lines to divide their array	Find the inverse of multiplication and division sentences by creating four linking number sentences. $7 \times 4 = 28$ $4 \times 7 = 28$ $28 \div 7 = 4$ $28 \div 4 = 7$

Exploring division with remainder to develop knowledge of Odd and Even numbers			
Exploring division with remainder to develop knowledge of Odd and Even numbers EYFS–explore which numbers cannot be divided into whole numbers and develop understanding of Odd and Even numbers	 $14 \div 3 =$ Divide objects between groups and see how many are left over.	 $7 \div 2 = 3$ R 1 ← Remainder remainder 2	Complete written divisions and show the remainder using r. $29 \div 8 = 3$ REMAINDER 5 ↑ ↑ ↑ ↑ dividend divisor quotient remainder