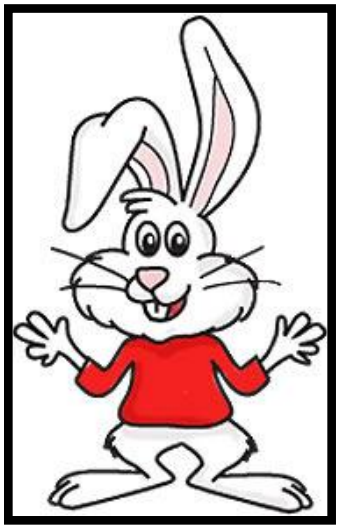
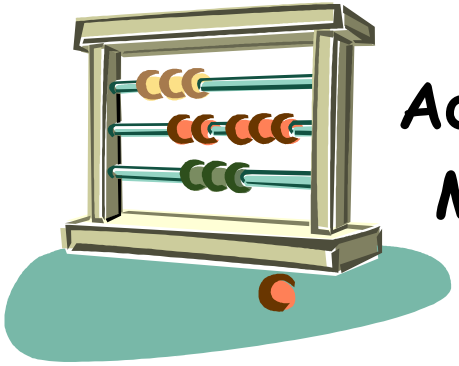
A Parent's Guide to



Year 1 Models and Calculation Strategies: Addition, Subtraction, Place Value, Multiplication, Division and Fractions Key Stage 1 Maths



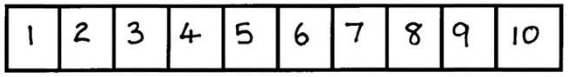
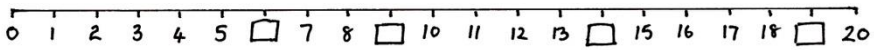
The principal focus of mathematics in Key Stage 1 is to help pupils to develop confidence and mental fluency with whole numbers, counting and place value. This involves working with numerals, words and the 4 operations, including with practical resources (eg. Concrete objects and measuring tools.)

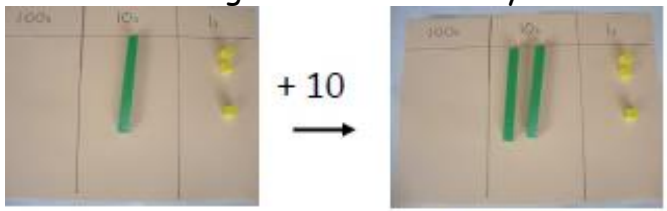
Pupils will develop their ability to recognise, describe, draw and compare and sort different shapes and use the related vocabulary. They will use a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of Year 1 pupils need to represent the number bonds to 20 and be precise in using and understanding place value.

This booklet shows the progression of models and images that we will be using in school to teach each operation across Year 1. Encourage tour child to use concrete objects first, then record pictorially before moving onto more abstracts forms of recording.

Counting

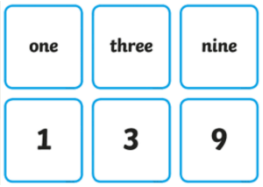
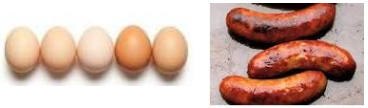
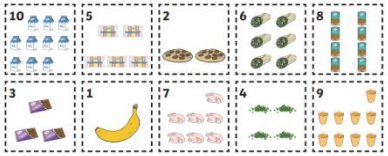
Strategy	Examples	Vocabulary
Oral Counting	Oral counting in 1s forwards and backwards to 20,50 then 100 starting from 0. …… 0123 etc Concentrate on the tricky decades eg 28,29,30,31 or 38;39;40,41 etc Progress to starting at any number and counting in 1s. 5,6,7 etc Concentrate on the tricky areas eg, bridging through 100 87,98,99,100,101,102 Remember to count backwards as frequently as you count on!	Number names, decades, count on, count back, more, less, tens
Multi-representation of numbers to 20	 Give children opportunities to make links with number labels.(figures) Object counting and ordering numbers	Number names count, count on, more, less
Counting in ones/hopping forwards/backwards on a number track	Number tracks/washing lines/ numbered numberlines   Stand on 10 and count on 4. What number are you on?	forwards, more than, numbers

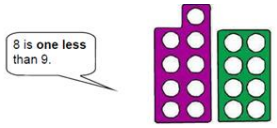
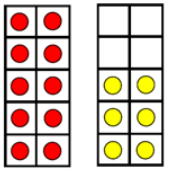
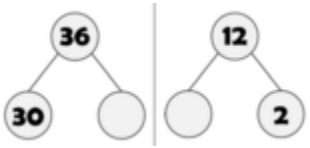
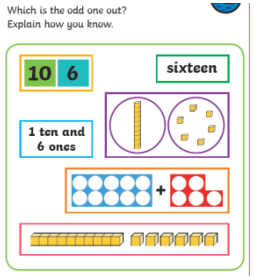
Strategy	Examples	Vocabulary
Counting in 10s	Counting in 10s 10, 20, 30, 40 etc up to 100 Then counting in 10s from any number forwards and backwards 13, 23, 33 What has changed? What has stayed the same?  	tens, ones, count forwards, count backwards, 10 more, 10 less, same, different columns

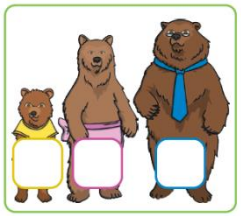
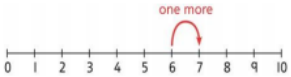
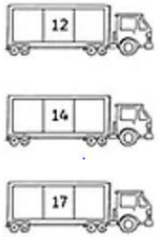
Place Value and Number System

'Pupils begin to recognise place value in numbers beyond 20 by reading, writing, counting and comparing numbers up to 100, supported by objects and pictorial representations. '

Strategy/ Curriculum Statement	Concrete	Pictorial	Abstract	Vocabulary
Read and write numbers to 100 in numerals	Reading numbers    Writing numbers 	  	Missing numbers. Using the number system to complete sections of a 100 square.  Writing numbers –beginning and ending at the correct place. 12 21 What is the same/different? Which number is bigger/smaller? How do we know? What comes before/after?	number names, tens, ones

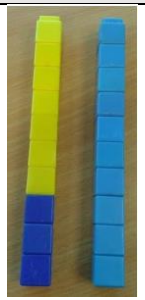
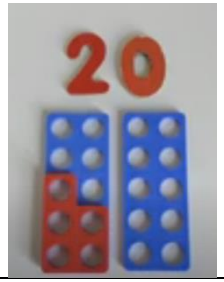
Read and write numbers in words	Stories can be used to give a context. Where might we find numbers in real life? 		Problems with a mix of numerals, words and objects show secure understanding of the number system. Jack had five eggs and Tom had 3 sausages. How many items did they have altogether? 	number names, tens, ones
Ordering numbers	 Which numbers are covered? Give me a number between …… and ……. How do you know? 	Seeing the relationship between objects and numbers can give numbers a quantity. 	Order random numbers to 100 How do we know which is smallest/biggest? 	next, 1 more, after, more than, less than, fewer, most, least, bigger, smaller, tens, ones

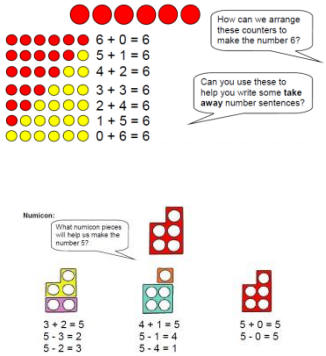
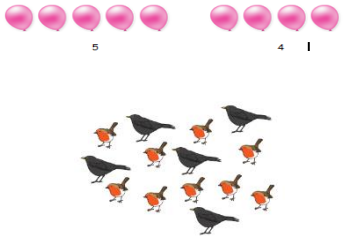
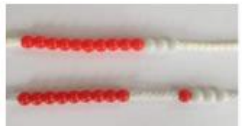
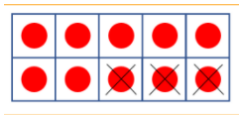
Identify and represent numbers	    Children add one more cube or counter to a group to represent one more.   	Diennes are used to partition numbers into tens and ones.  By using two ten frames children can start to see the value of each digit in a number. Creating part part wholes to show the two partitioned tens and ones in a number.  	Which number is 46? Is is 6 or 16? How would you write.....	tens, ones, 2 digits, partition

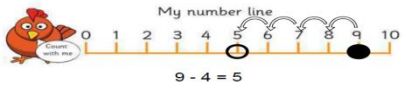
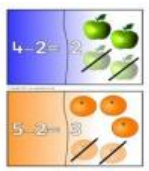
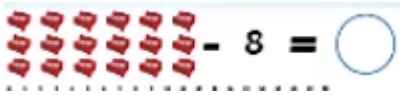
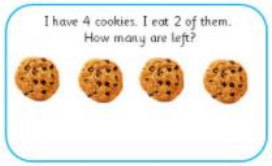
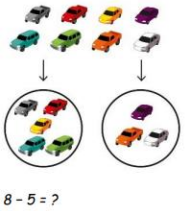
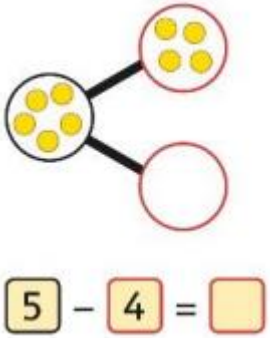
Identify one more and one less	Relating one more one less to size. Shows the increase/decrease of an object/number. Pick a Numicon Shape for Mummy Bear and write the number in her square. Find and write the number that is one more for Daddy Bear and one less for Baby Bear. 	Use a number line to understand how to link counting on with finding one more.  *One more than 6 is 7.* *7 is one more than 6.*		next, 1 more, after, more than, less than, fewer, most, least, bigger, smaller, tens, before, forwards, backwards, number names.

Addition and Subtraction

'Pupils memorise and reason with number bonds to 10 and 20 in several forms. They should realise the effect of adding or subtracting zero. This establishes addition and subtraction as related operations. Pupils combine and increase numbers, counting forwards and backwards.'

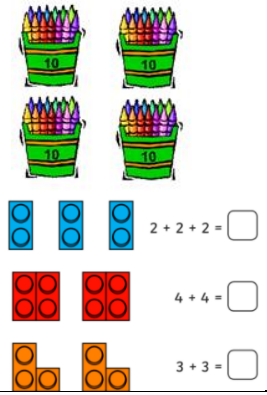
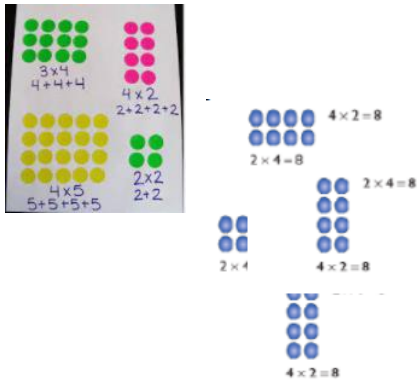
Strategy/ Curriculum Statement	Concrete	Pictorial	Abstract	Vocabulary
Represent and use number bonds to and within 20	  	 Complete the bar models. a) 20 8 c) 4 20	The models show that the numbers are part of a 'fact family'. The number 20 is made of two parts. Using the concrete and pictorial models you can work out possible number sentences. 12 + 8 = 20 8 + 12 = 20	Bar model Whole part part Commutative Addition Subtraction relationship

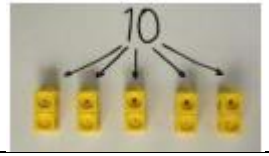
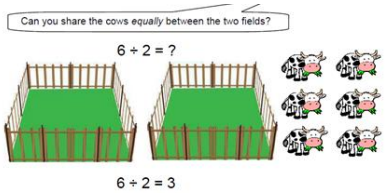
Add one and two digit numbers to 20			8 + 7 = 12 + 3 = 14 = 4 + 11 = + 9 Number sentences can be written in different orders to help understand concept of whole number.	
To solve one step problems that involve addition	Using physical objects to solve real life problems e.g. going to the supermarket and counting money or items into a basket.		There are 5 balloons. 4 more balloons are added. How many balloons are there in total?	
Use related subtraction facts to 20	 The beads can be physically moved or taken away to support subtraction.	 Crossing out from right to left to resemble taking away from the biggest number.	If 18 + 2 = 20 What will 20 – 18 = I know that 20 – 7 = 13 So what would 20 – 17 = ?	subtraction, subtract, take away, minus, less than, most, least.

Subtract one and two digit numbers to 20	  Story books and songs are a great way to engage children with simple subtraction and visuals of objects getting smaller. Some examples are: Handa's surprise Ten sly Piranha's Ten green bottles	  	18 -3= 15 8 – 2 = 6 There are 15 cakes in the shop. One cake is eaten, how many are left.	
To solve one step problems that involve subtraction	Using physical objects to takeaway. 		Milo has 10 sweets. He eats 4. How many does he have left?	
To answer missing number problems			2 + ☐ = 6 8 + ☐ = 9 1 + ☐ = 10 5 + ☐ = 8 ☐ + 8 = 10 ☐ + 6 = 9	

Multiplication and Division

'Through grouping and sharing small quantities, pupils begin to understand: multiplication and division; doubling numbers and quantities; and finding simple fractions of objects, numbers and quantities.'

Strategy/ Curriculum Statement	Concrete	Pictorial	Abstract	Vocabulary
Solving one step problems of multiplication - Repeated addition	2p + 2p + 2p = 6p 		5 + 5 + 5 + 5 + 5 = 25p The are 5 lots of 5p 5 x 5 = 25	repeated addition array multiplication lots of division share split equal parts
Solve one step problems of multiplication - Arrays			3 children go to the park to hunt for plne 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	

Solving one step problems of division - Grouping		Give opportunities to draw shapes/symbols to group objects  8 ÷ 2 = 4	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?	
Solving one step problems of division - Sharing	 		Share 9 buns between three people. 9 ÷ 3 = 3	