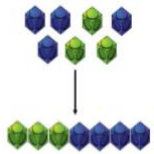
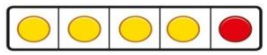
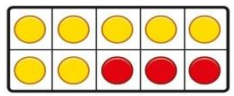
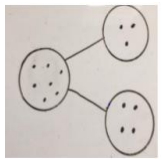
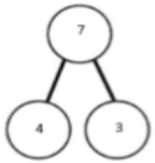
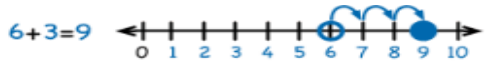
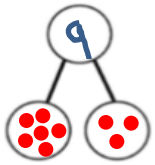
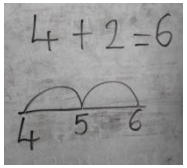
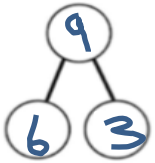
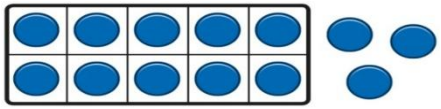
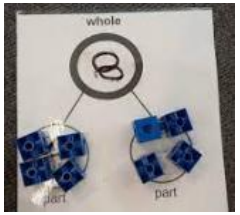
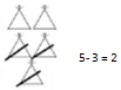
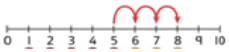
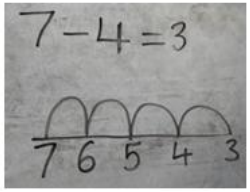
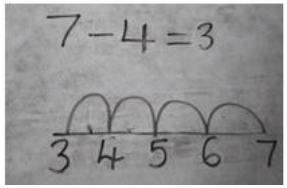
Year 1
Key Stage 1
Children in Years 1 and 2 will be given a really solid foundation in the basic building blocks of mental and written arithmetic. Through being taught place value, children will develop an understanding of how numbers work, so that they are confident with 2-digit numbers and beginning to read and say numbers above 100. A CPA approach will be used throughout each unit, ensuring a range of manipulative and representations are used to support children's learning.

Addition and Subtraction: A focus on number bonds, first via practical hands-on experiences and subsequently using memorisation techniques, enables a good grounding in these crucial facts, and ensures that all children leave Year 2 knowing the pairs of numbers which make all the numbers up to 10 at least. Children will also have experienced and been taught pairs to 20. Children's knowledge of number facts enables them to add several 1-digit numbers, and to add/subtract a 1-digit number to/from a 2-digit number. Another important conceptual tool is the ability to add/subtract 1 or 10, and to understand which digit changes and why. This understanding is extended to enable children to add and subtract multiples of 10 to and from any 2-digit number. The most important application of this knowledge is the ability to add or subtract any pair of 2-digit numbers by counting on or back in 10s and 1s. Children will then extend this knowledge by learning the written method of column addition and subtraction (with regrouping and exchanging) with emphasis on the place value of each digit.	**Multiplication and Division:** Children will be taught to count in 2s, 3s, 5s and 10s, and will relate this skill to repeated addition. Children will learn the associated ×2, ×3, ×5 and ×10 tables. Engaging in a practical way with the concept of repeated addition and the use of arrays enables children to develop a preliminary understanding of multiplication, and asking them to consider how many groups of a given number make a total will introduce them to the idea of division. Children will also be taught to double and halve numbers, and will thus experience scaling up or down as a further aspect of multiplication and division.	**Fractions:** Fractions will be introduced as numbers and as operators, specifically in relation to halves, quarters and thirds. Children will learn how to find halves and quarters of shapes and amounts, linking to their learning of division, using the same skills and methods.

	National Curriculum Objectives	Mental Calculation	Written Calculation
	Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs Represent and use number bonds and related subtraction facts within 20 Add one-digit and two-digit numbers to 20, including zero Solve one-step problems that involve addition, using concrete objects and pictorial representations, and missing number problems such as 7 = 4 + ☐	Place the larger number in your head and count on the smaller number to find your answer. 9 + 4 = 13 E.g. If I am at 9, how many more do I need to make 13. How many more do I add on now? Learn number bonds to 10	**Combining two parts to make a whole- (Including number bonds)** **Concrete** (use other resources too e.g. counters, teddy bears, cars and demonstrate on a number frame)  *4 + 3 = 7*  *4 + 1 = 5*  *7 + 3 = 10* **Children to represent the concrete objects using dots or crosses on a part whole model**  **Pictorial**  **Abstract** *4 + 3 = 7 Four is a part, 3 is a part and the whole is seven.*

Y1 +		Place the larger number in your head and add the smaller number by counting on to find your answer. 2 + 14 = Put 14 in your head and count on another 2 to find the answer of 16.	**Starting at the bigger number and counting on** **Concrete** Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.  *12 + 5 = 17* **Pictorial**  Circle the biggest number and jump forwards the smaller number in the number line.  6+3=9 Draw counters to add each part to the part sections of the whole part model. Count the total to find the sum. **The abstract number line** *What is 2 more than 4? What is the sum of 2 and 4?* *What is the total of 4 and 2? 4 + 2 =*  **The abstract part whole model**  **Understanding teen numbers as a complete 10 and some more** **Concrete** Complete a group of 10 objects and count more.  *13 is 10 and 3 more. 10 + 3 = 13*

Y1 +	**Pictorial** Use a ten frame to support understanding of a complete 10 for teen numbers.  *13 is 10 and 3 more.* **Abstract** *1 ten and 3 ones equal 13.* *10 + 3 = 13* **Finding a missing part** **Concrete** Use a part, whole model to find the missing part. Add the part we already have using cubes or counters. Count on until we get to the whole using the counters or cubes.  **Pictorial** As above using a whiteboard and pen. Draw counters for the parts.

Y1 –	Read, write and interpret mathematical statements involving subtraction (-) and equals (=) signs Represent and use number bonds and related subtraction facts within 20 Subtract one-digit and two-digit numbers to 20, including zero Solve one-step problems that involve subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? – 9.	Place the larger number in your head and count back the smaller number to find your answer. 13 – 4 = 9 E.g. If I am at 13, how many do I need to count back to get to 9? Learn number bonds to 10 and related subtraction sentences	**Counting back and taking away** **Concrete** Children arrange objects and remove to find how many are left. 1 less than 6 is 5. 6 subtract 1 is 5. 6- 1 = 5  Move the beads along the bead string as you count backwards.  13- 4 = 9 **Pictorial** Cross out drawn objects to show what has been taken away. 5- 3 = 2  Children count back to take away and use a number line or number track to support the method.   8 – 3 = 5 **The abstract number line** What is 4 less than 7? What is 7 subtract 4? 7 – 4 =  

Y1

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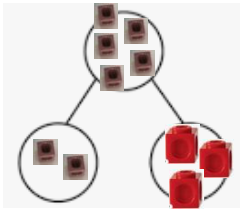
Finding a missing part, given a whole and a part

Concrete

Given a missing number subtraction number sentence, we first of all find the inverse.
We then use a whole, part model and cubes or counters.
We put the whole number in the whole section.
We put the part we know in the part section.
We count on from the part we know using cubes until we get to the whole number.

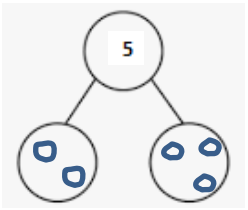
5 - ? = 2
inverse
2 + ? = 5



The missing number is 3.

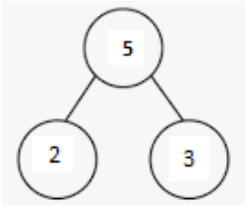
Pictorial

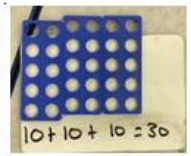
We find the inverse of the number sentence.
We draw a whole part model.
We write the whole number in the whole section.
We draw the part we know in the part section.
We count on from the part we know by drawing counters and stopping when we get to the whole.

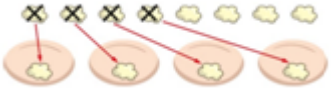


Abstract

We find the inverse of the number sentence.
We draw a whole, part model.
We write the whole number in the whole section.
We write the part in the part section.
We count on from the part until we get to the whole and write the missing part .



Y1 x	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	Count in 2s, 5s and 10s Begin to say what three 5s are by counting in 5s, or what four 2s are by counting in 2s, etc. Double numbers to 10	**Multiplication** **Recognising and making equal groups** **Concrete** Children arrange objects in equal and unequal groups and understand how to recognise whether they are equal.  **Pictorial** Children draw and represent equal groups.  Describe equal groups using words e.g. there are 3 equal groups of 5 NB: This method also to be used when finding doubles of amounts. **2 lots of 4 is the same as double 4**  **Finding the total of equal groups by counting in 2s, 5s and 10s** **Concrete**  2 4  5 10 15  There are 5 pens in each pack 5...10...15...20...25...30...35...40... **Repeated addition** Use different objects and pictures to add equal groups. Write addition sentences to describe objects and pictures.    Number squares to support counting in 2s, 5s and 10s.

Y1 **÷**	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	Begin to count in 2s, 5s and 10s Find half of even numbers to 12 Find half of even numbers by sharing	**Division** **Grouping** **Concrete** Learn to make equal groups from a whole and find how many equal groups of a certain size can be made. Sort a whole set people and objects into equal groups.  ***There are 10 children altogether.*** ***There are 2 in each group.*** ***There are 5 groups.*** **Pictorial** Represent a whole and work out how many equal groups.  There are 10 in total. There are 5 in each group. There are 2 groups. **Sharing** Share a set of objects into equal parts and work out how many are in each part**.**  Sketch or draw to represent sharing into equal parts. This may be related to fractions.  10 shared into 2 equal groups gives 5 in each group.  $\frac{1}{2}$ of 10 is 5 NB: This method also to be used when finding fractions of amounts.