

2017-2018

Whitmore Primary School & Nursery
Year 1 Maths Guide



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How to use this guide

This is a guide for parents, carers and staff at Whitmore Primary School and Nursery.

The purpose of this document is to allow everyone to see the different methods, models and images that are used to teach addition, subtraction, multiplication and division. This will allow parents and carers to help their children at home and will also ensure consistency in teaching at school.

Maths at Whitmore uses the principles of **'Concrete, Pictorial, Abstract' (CPA)**. Children start off using 'Concrete' resources, such as blocks and counters, which they can move and manipulate to represent calculations. They then move on to the 'Pictorial' stage where they may use or draw pictures to represent calculations. Finally, they move on to the 'Abstract' stage where they use numbers and symbols to show calculations.

Concrete methods and equipment will be used at some point in all year groups – using practical resources instead of abstract methods does not necessarily mean that a child is working below age-related expectations. Children may also use a variety of different methods to solve reasoning problems; again, this does not necessarily mean that they are working below the level expected for their age.

This guide is divided into three sections. The first section shows you the different objectives and methods that your child will encounter at school. In this section, each calculation type has been colour coded.

Addition methods are **orange**

Subtraction methods are **blue**

Multiplication methods are **green**

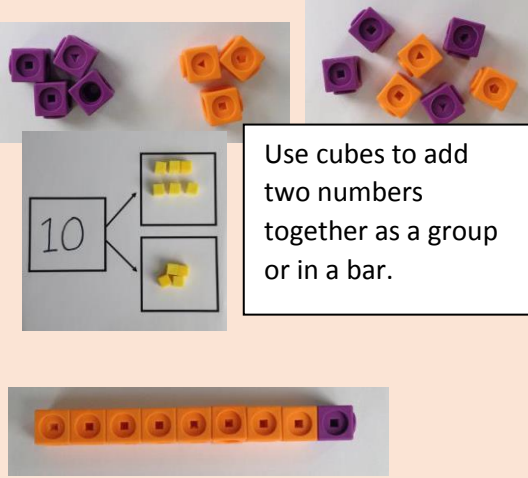
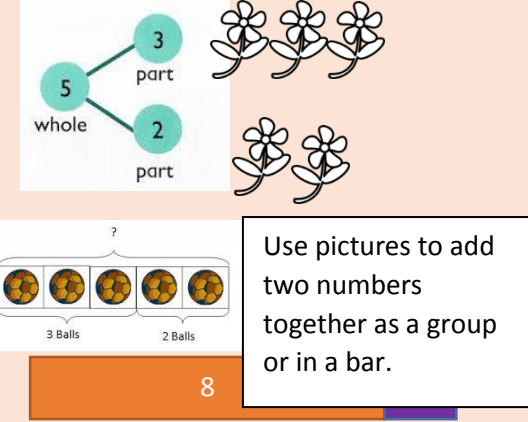
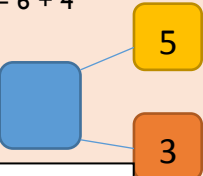

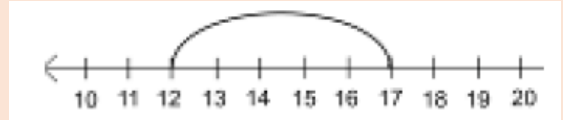
Division methods are **yellow**


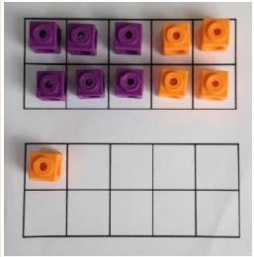
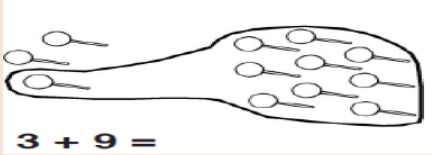
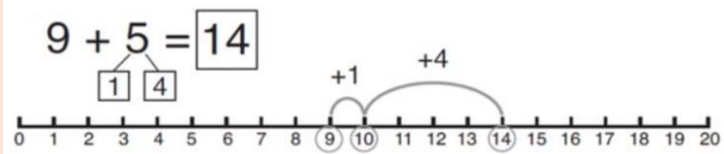
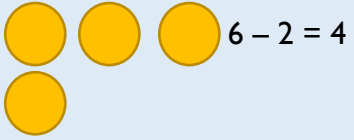

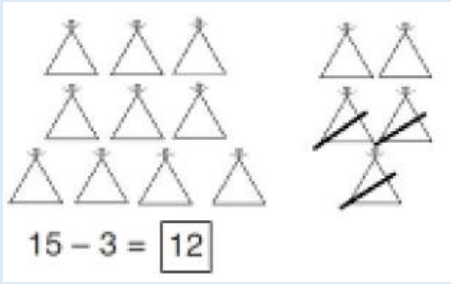
Each method shows you the concrete, pictorial and abstract ways to use each method. Different problems may require different methods – if your child finds a question difficult, see if they can use a different method to solve the problem.

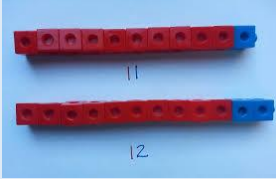
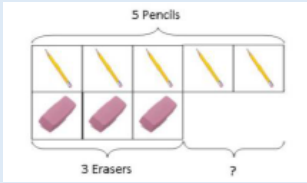
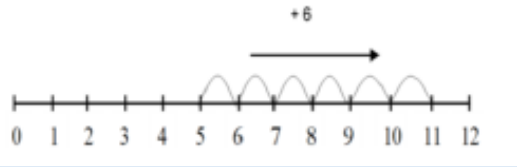
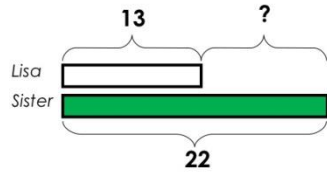
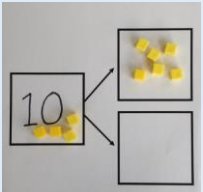
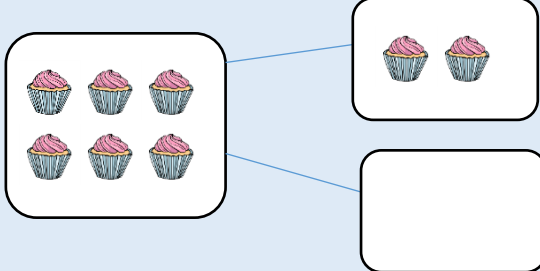
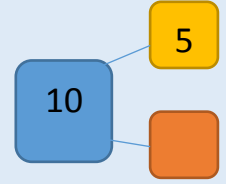
In the second section, you will find the National Curriculum objectives and the 'Big Ideas' for each year group. The Big Ideas are the key concepts that children need to understand in order to progress successfully. The National Curriculum objectives are what children need to achieve to be working at age-related expectations at the end of each year.



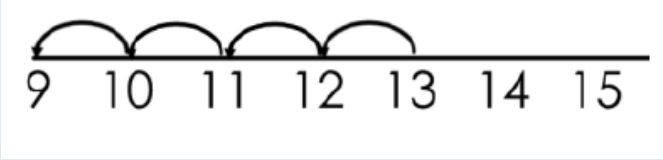
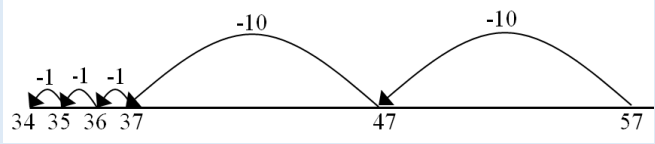

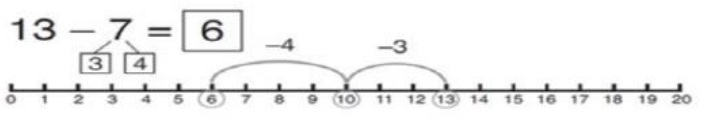
In the third section, you will find the new mathematical vocabulary that your child will encounter this year; this will build on the new words introduced and used in previous years.

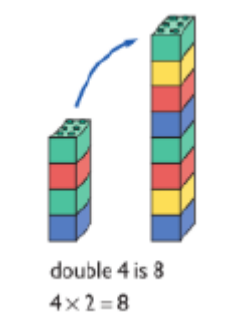
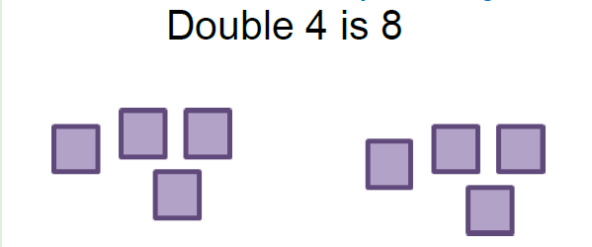
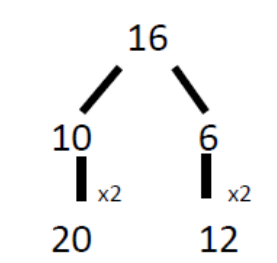
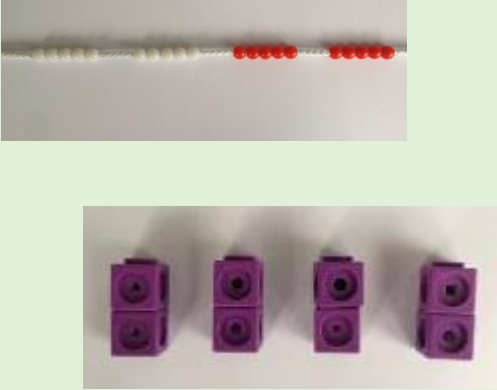
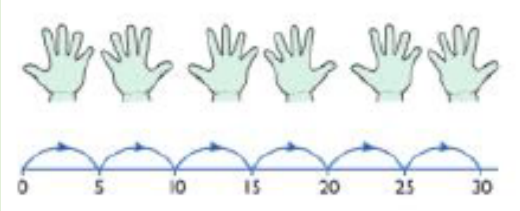
Year 1 Methods and Objectives

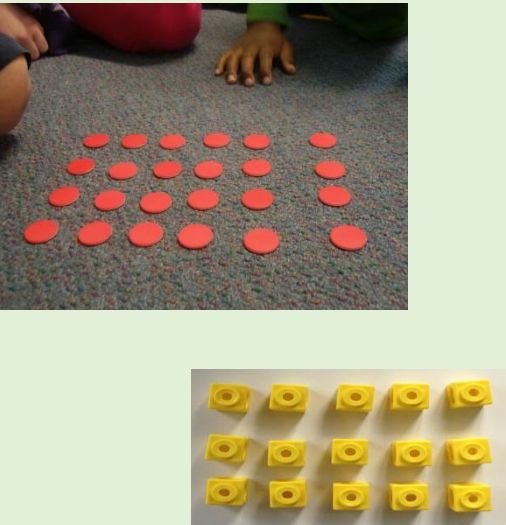
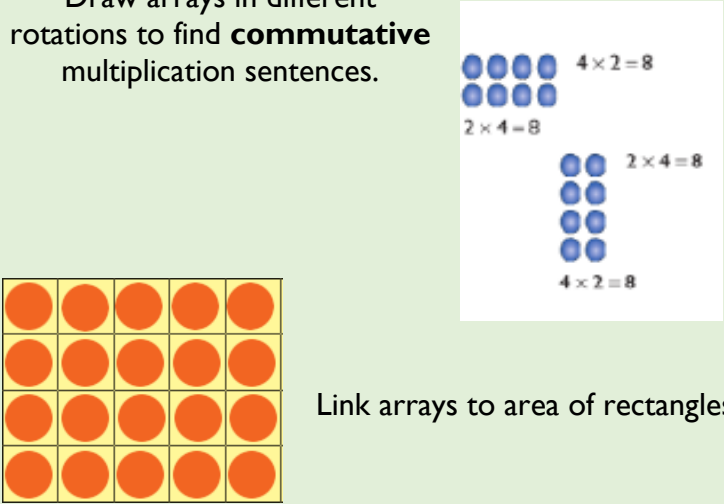

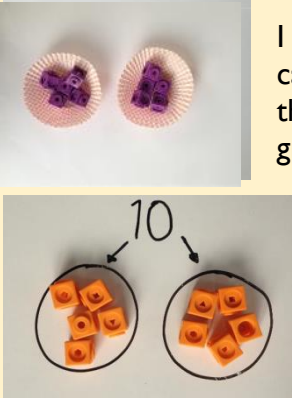
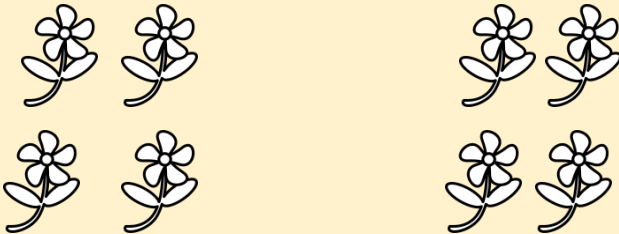
Objective and Strategies	Concrete	Pictorial	Abstract
<p>Combining two parts to make a whole: part- whole model</p>	 <p>Use cubes to add two numbers together as a group or in a bar.</p>	 <p>Use pictures to add two numbers together as a group or in a bar.</p>	<p>$4 + 3 = 7$</p> <p>$10 = 6 + 4$</p>  <p>Use the part-part whole diagram as shown above to move into the abstract.</p>
<p>Starting at the bigger number and counting on</p>	 <p>Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.</p>	<p>$12 + 5 = 17$</p>  <p>Start at the larger number on the number line and count on in ones or in one jump to find the answer.</p>	<p>$5 + 12 = 17$</p> <p>Place the larger number in your head and count on the smaller number to find your answer.</p>

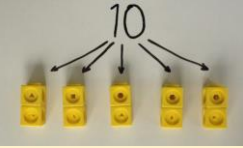
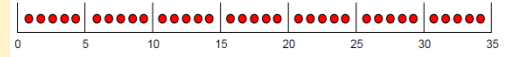
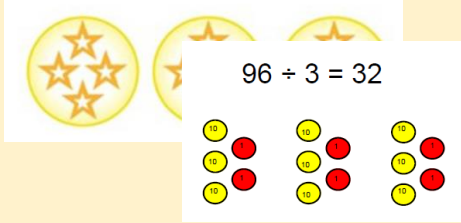
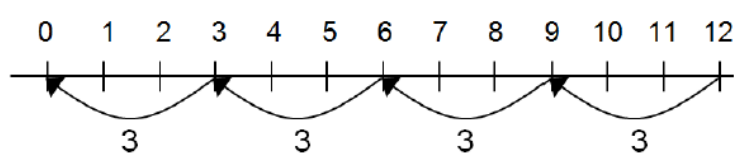
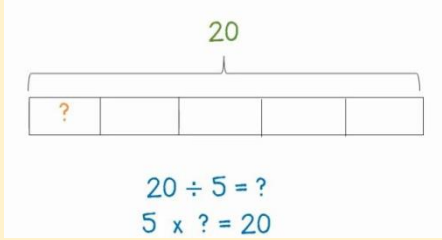
Objective and Strategies	Concrete	Pictorial	Abstract
<p>Regrouping to make 10</p>	 <p>$6 + 5 = 11$</p>  <p>Start with the bigger number and use the smaller number to make 10.</p>	 <p>$3 + 9 =$</p> <p>Use pictures or a number line. Regroup or partition the smaller number to make 10.</p>  <p>$9 + 5 = 14$</p>	<p>$7 + 4 = 11$</p> <p>If I am at seven, how many more do I need to make 10. How many more do I add on now?</p>
<p>Taking away ones</p>	<p>Use physical objects, counters, cubes, etc. to show how objects can be taken away.</p>  <p>$6 - 2 = 4$</p> 	<p>Cross out drawn objects to show what has been taken away.</p>  <p>$15 - 3 = 12$</p>	<p>$18 - 3 = 15$</p> <p>$8 - 2 = 6$</p>

Objective and Strategies	Concrete	Pictorial	Abstract
<p>Find the difference</p>	<p>Compare amounts and objects to find the difference.</p>  <p>Use cubes to build towers or make bars to find the difference</p>  <p>Use basic bar models with items to find the difference</p>	 <p>Count on to find the difference.</p> <p>Comparison Bar Models</p> <p>Lisa is 13 years old. Her sister is 22 years old. Find the difference in age between them.</p>  <p>Draw bars to find the difference between 2 numbers.</p>	<p>Hannah has 23 sandwiches, Helen has 15 sandwiches. Find the difference between the number of sandwiches.</p>
<p>Part Part Whole Model</p>	 <p>Link to addition- use the part whole model to help explain the inverse between addition and subtraction.</p> <p>If 10 is the whole and 6 is one of the parts. What is the other part?</p> <p>$10 - 6 =$</p>	<p>Use a pictorial representation of objects to show the part part whole model.</p> 	 <p>Move to using numbers within the part whole model.</p>

Objective and Strategies	Concrete	Pictorial	Abstract
<p>Counting back</p>	<p>Make the larger number in your subtraction. Move the beads along your bead string as you count backwards in ones.</p>  <p>$13 - 4$</p> <p>Use counters and move them away from the group as you take them away counting backwards as you go.</p> 	<p>Count back on a number line or number track</p>  <p>Start at the bigger number and count back the smaller number showing the jumps on the number line.</p>  <p>This can progress all the way to counting back using two 2 digit numbers.</p>	<p>Put 13 in your head, count back 4. What number are you at? Use your fingers to help.</p>
<p>Make 10</p>	<p>$14 - 9 =$</p>  <p>Make 14 on the ten frame. 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.</p>	 <p>$13 - 7 = 6$</p> <p>Start at 13. Take away 3 to reach 10. Then take away the remaining 4 so you have taken away 7 altogether. You have reached your answer.</p>	<p>$16 - 8 =$</p> <p>How many do we take off to reach the next 10?</p> <p>How many do we have left to take off?</p>

Objective and Strategies	Concrete	Pictorial	Abstract
<p>Doubling</p>	<p>Use practical activities to show how to double a number.</p> 	<p>Draw pictures to show how to double a number.</p> <p>Double 4 is 8</p> 	 <p>Partition a number and then double each part before recombining it back together.</p>
<p>Counting in multiples</p>	 <p>Count in multiples supported by concrete objects in equal groups.</p>	 <p>Use a number line or pictures to continue support in counting in multiples.</p>	<p>Count in multiples of a number aloud.</p> <p>Write sequences with multiples of numbers.</p> <p>2, 4, 6, 8, 10</p> <p>5, 10, 15, 20, 25, 30</p>

Objective and Strategies	Concrete	Pictorial	Abstract
<p>Arrays- showing commutative multiplication (with support)</p>	<p>Create arrays using counters/ cubes to show multiplication sentences.</p> 	<p>Draw arrays in different rotations to find commutative multiplication sentences.</p>  <p>Link arrays to area of rectangles.</p>	<p>Use an array to write multiplication sentences and reinforce repeated addition.</p>  <p> $5 + 5 + 5 = 15$ $3 + 3 + 3 + 3 + 3 = 15$ $5 \times 3 = 15$ $3 \times 5 = 15$ </p>
<p>Sharing objects into groups</p>	<p>I have 10 cubes, can you share them equally in 2 groups?</p> 	<p>Children use pictures or shapes to share quantities.</p>  <p>$8 \div 2 = 4$</p>	<p>Share 9 buns between three people.</p> <p>$9 \div 3 = 3$</p>

Objective and Strategies	Concrete	Pictorial	Abstract
<p>Division as grouping</p>	<p>Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.</p>   	<p>Use a number line to show jumps in groups. The number of jumps equals the number of groups.</p>  <p>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.</p> 	<p>$28 \div 7 = 4$</p> <p>Divide 28 into 7 groups. How many are in each group?</p>

Year 1 Curriculum Expectations and Big Ideas

End of Year 1 Expectations	Big Ideas
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • count to and across 100, forwards and backwards, beginning with 0 or one, or from any given number • count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens • given a number, identify one more and one less • represent and use number bonds and related subtraction facts within 20 • add and subtract 1-digit and 2-digit numbers to 20, including 0 • 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 	<ul style="list-style-type: none"> • The position a digit is placed in a number determines its value. • The language used to name numbers does not always expose the place value, for example the word 'twelve' does not make it transparent that the value of this number is ten and two. It is important that children develop secure understanding of the value of each digit. • Place value is based on unitising: treating a group of things as one 'unit'. In mathematics, units can be any size, for example units of 1, 2, 5 and 10 are used in money. • In place value units of 1, 10 and 100 are used. • Relating numbers to 5 and 10 helps develop knowledge of the number bonds within 20. For example, given $8 + 7$, thinking of 7 as $2 + 5$ and adding the 2 to 8 to make 10 and then the 5 to total 15. • Thinking of part whole relationships is helpful in linking addition and subtraction. For example, where the whole is 6, and 4 and 2 are parts. This means that 4 and 2 together form the whole, which is 6 and 6 subtract 4 leaves the 2 and 6 subtract 2 leaves the 4. • Counting in steps of equal sizes is based on the big idea of 'unitising' ; treating a group of, say, five objects as one unit of five. • Working with arrays helps pupils to become aware of the commutative property of multiplication, that 2×5 is equivalent to 5×2.

New Vocabulary for Year 1

Number and place value	
Number	Numeral
Zero, one, two, three to twenty, and beyond	Figure(s)
None	Compare
Count (on/up/to/from/down)	(In) order/a different order
Before, after	Size
More, less, many, few, fewer, least, fewest, smallest, greater, lesser	Value
Equal to, the same as	Between, halfway between
Odd, even	Above, below
Pair	Ten more/less
Units, ones, tens	Digit

Addition and subtraction	Multiplication and division
<p>Number bonds, number line</p> <p>Add, more, plus, make, sum, total, altogether</p> <p>Inverse</p> <p>Double, near double</p> <p>Half, halve</p> <p>Equals, is the same as (including equals sign)</p> <p>Difference between</p> <p>How many more to make..? How many more is...than..? How much more is..?</p> <p>Subtract, take away, minus</p> <p>How many fewer is...than..? How much less is..?</p>	<p>Odd, even</p> <p>Count in twos, threes, fives</p> <p>Count in tens (forwards from/backwards from)</p> <p>How many times?</p> <p>Lots of, groups of</p> <p>Once, twice, three times, five times</p> <p>Multiple of, times, multiply, multiply by</p> <p>Repeated addition</p> <p>Array, row, column</p> <p>Double, halve</p> <p>Share, share equally</p> <p>Group in pairs, threes, etc.</p> <p>Equal groups of</p> <p>Divide, divided by, left, left over</p>

Fractions	General/problem solving
<p>Whole</p> <p>Equal parts, four equal parts</p> <p>One half, two halves</p> <p>A quarter, two quarters</p>	<p>Listen, join in</p> <p>Say, think, imagine, remember</p> <p>Start from, start with, start at</p> <p>Look at, point to</p> <p>Put, place, fit</p> <p>Arrange, rearrange</p> <p>Change, change over</p> <p>Split, separate</p> <p>Carry on, continue, repeat & what comes next?</p> <p>Find, choose, collect, use, make, build</p> <p>Tell me, describe, pick out, talk about, explain, show me</p> <p>Read, write, record, trace, copy, complete, finish, end</p> <p>Fill in, shade, colour, tick, cross, draw, draw a line between, join (up), ring, arrow</p> <p>Cost</p> <p>Count, work out, answer, check same number(s)/different number(s)/missing number(s)</p> <p>Number facts, number line, number track, number square, number cards</p> <p>Abacus, counters, cubes, blocks, rods, die, dice, dominoes, pegs, peg board</p> <p>Same way, different way, best way, another way</p> <p>In order, in a different order</p> <p>Not all, every, each</p>