



***Power Maths* calculation policy, Foundation**

March 2022

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The following pages show the *Power Maths* progression in calculation (addition, subtraction, multiplication and division). The consistent use of the CPA (concrete, pictorial, abstract) approach across *Power Maths* helps children develop mastery across all the operations in an efficient and reliable way. In Foundation, children focus on concrete and pictorial representations. At this stage, children focus on representing objects in different ways e.g. understanding that 5 cars can also be represented as 5 counters, 5 cubes, 5 pictures of cars etc.

In Foundation, children are encouraged to record their findings in their own way. This may include writing number sentences e.g. $3 + 4 = 7$, however this is not a requirement until Year 1.


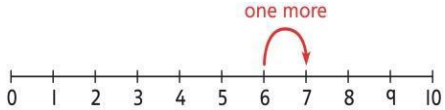
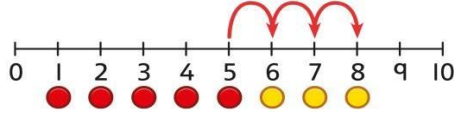

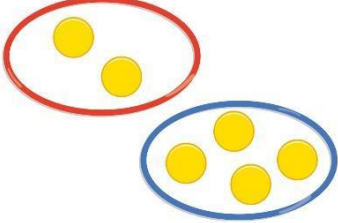
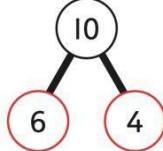
Power Maths calculation policy Foundation

Children develop the core ideas that underpin all calculation. They begin by connecting calculation with counting on and counting back, but they should learn that understanding wholes and parts will enable them to calculate efficiently and accurately, and with greater flexibility. Children record their calculations in their own ways, there is no expectation of number sentences at this stage however children may choose this way to record their thinking.

Key language: whole, part, ones, ten, tens, number bond, add, addition, plus, total, altogether, subtract, subtraction, find the difference, take away, minus, less, more, group, share, equal, equals, is equal to, groups, equal groups, divide, share, shared equally

Addition:	Subtraction:	Multiplication and Division:
<p>Children start to explore addition by sorting groups. They then use sorting to develop their understanding of parts and wholes.</p> <p>Children combine groups to find the whole, using a part-whole model to support their thinking. They also use the part-whole model to find number bonds within and to 10.</p> <p>Using a five frame and ten frame, children add by counting on. They start by finding one more before adding larger numbers using counters or cubes on the frames.</p> <p>Children use a number track to add by counting on. Linking this learning to playing board games is an effective way to support children's addition.</p>	<p>Children start to explore subtraction by sorting groups. They use sorting to develop their understanding of parts and wholes.</p> <p>When comparing groups, children use the language more than and fewer than. This will lead to finding the difference when they move into KS1.</p> <p>Children then connect subtraction with the idea of counting back and finding one less using a five frame to support their thinking.</p> <p>They explore subtraction by partitioning numbers, developing their understanding of parts and wholes. This links to their developing recall of number bonds.</p> <p>Children count back within 20 using number tracks and ten frames to see the effect of taking away.</p>	<p>Children first start to look at the idea of equal groups through their exploration of doubles. They use five frames and objects to check that groups are equal.</p> <p>Children then explore halving numbers by making 2 equal groups. They highlight patterns between doubling and halving seeing that double 2 is 4 and half of 4 is 2.</p> <p>As well as halving, children also explore sharing into more than 2 equal groups. They share objects 1 by 1, ensuring that each group has an equal share.</p>

EYFS

	Concrete	Pictorial	Abstract
EYFS Addition	Counting and adding more Children add one more person or object to a group to find one more.	Counting and adding more Children add one more cube or counter to a group to represent one more.  <i>One more than 4 is 5.</i>	Counting and adding more Use a number line to understand how to link counting on with finding one more.  <i>One more than 6 is 7. 7 is one more than 6.</i> Learn to link counting on with adding more than one.  $5 + 3 = 8$
	Understanding part-part-whole relationship Sort people and objects into parts and understand the relationship with the whole.  <i>The parts are 2 and 4. The whole is 6.</i>	Understanding part-part-whole relationship Children draw to represent the parts and understand the relationship with the whole.  <i>The parts are 1 and 5. The whole is 6.</i>	Understanding part-part-whole relationship Use a part-whole model to represent the numbers.  $6 + 4 = 10$ $6 + 4 = 10$

Knowing and finding number bonds within 10

Break apart a group and put back together to find and form number bonds.



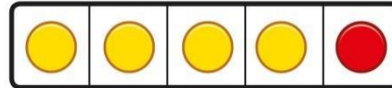
$$3 + 4 = 7$$



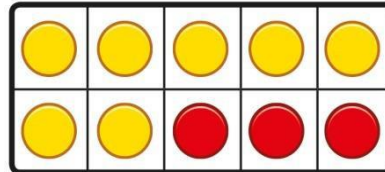
$$6 = 2 + 4$$

Knowing and finding number bonds within 10

Use five and ten frames to represent key number bonds.



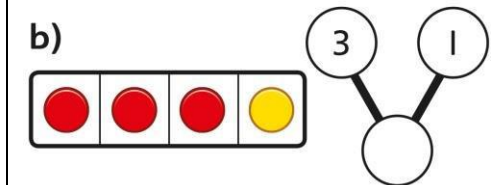
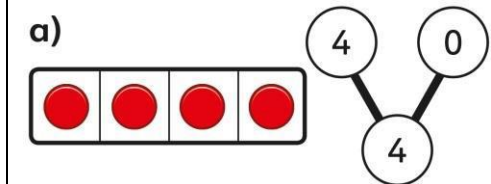
$$5 = 4 + 1$$



$$10 = 7 + 3$$

Knowing and finding number bonds within 10

Use a part-whole model alongside other representations to find number bonds. Make sure to include examples where one of the parts is zero.

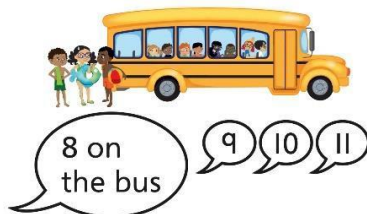


$$4 + 0 = 4$$

$$3 + 1 = 4$$

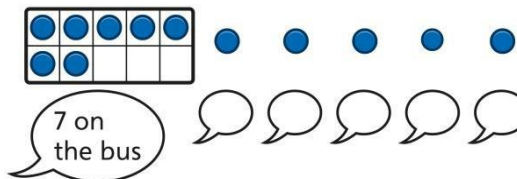
Adding by counting on

Children use knowledge of counting to 20 to find a total by counting on using people or objects.



Adding by counting on

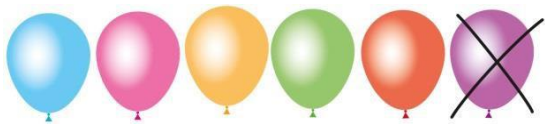
Children use counters to support and represent their counting on strategy.



**EYFS
Subtraction**

Counting back and taking away

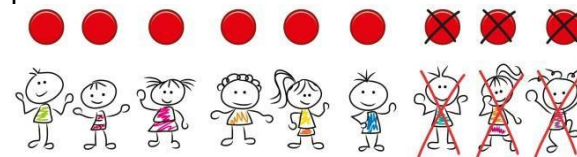
Children arrange objects and remove to find how many are left.



1 less than 6 is 5.
6 subtract 1 is 5.

Counting back and taking away

Children draw and cross out or use counters to represent objects from a problem.

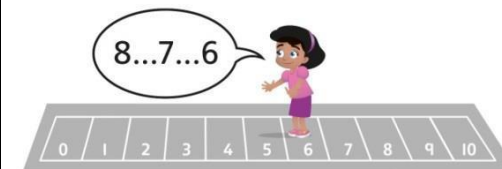


$$9 - \square = \square$$

There are children left.

Counting back and taking away

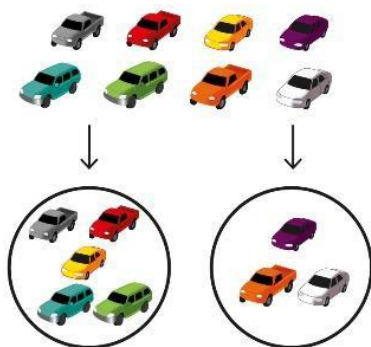
Children count back to take away and use a number line or number track to support the method.






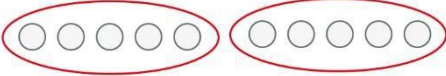
$$9 - 3 = 6$$

Finding a missing part, given a whole and a part

Children separate a whole into parts and understand how one part can be found by subtraction.



$$8 - 5 = ?$$

	<p>Subtraction within 10 Understand when and how to subtract 1s efficiently.</p> <p>Use a bead string to subtract 1s efficiently.</p>  <p>$5 - 3 = 2$</p>	<p>Subtraction within 10 Understand when and how to subtract 1s efficiently.</p>  <p>$5 - 3 = 2$</p>	<p>Subtraction within 10 Understand how to use knowledge of bonds within 10 to subtract efficiently.</p> <p>$5 - 3 = 2$</p>
<p>EYFS Division Double and halving</p>	<p>Grouping Learn to make equal groups from a whole and find how many equal groups of a certain size can be made.</p> <p>Sort a whole set people and objects into equal groups.</p>  <p><i>There are 10 children altogether. There are 2 in each group. There are 5 groups.</i></p>	<p>Grouping Represent a whole and work out how many equal groups.</p>  <p><i>There are 10 in total. There are 5 in each group. There are 2 groups.</i></p>	
	<p>Sharing Share a set of objects into equal parts and work out how many are in each part.</p> 