WELL GREEN PRIMARY SCHOOL, HALE

EARLY YEARS FOUNDATION STAGE CALCULATION POLICY

April 2020

Intent: To provide the children in our Early Years Foundation Stage with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shapes, spaces and measures. (Statutory Framework for the Early Years Foundation Stage, DfE: 2012)

Implementation: Children's work is based on the 'concrete, visual/ pictorial and abstract' approach. Children are introduced to an idea or skill using real objects-a 'hands on' approach. Children then move to the visual stage, where children relate concrete understanding to pictorial representations, such as the use of drawings and diagrams. The final abstract stage is using numbers, letters, signs and symbols.

In the EYFS, children will be experiencing practical calculation opportunities using a variety of equipment. Children will be developing ways of recording calculations using pictures and, when appropriate, abstract forms. The EYFS team use the 'Power Maths' scheme (Reception) which dove-tails into the Key Stage 1 and 2 mathematics scheme. Nursery use 'Numbers and Patterns: Laying Foundations in Mathematics, 2009', Number Blocks, plus a wide variety of equipment and resources to develop skills and understanding.

Impact: Formative and summative assessment is used to track children's understanding and skills against Development Matters and the Early Years Goals. On leaving the Foundation Stage, the majority of the children will be meeting or exceeding the Early Learning Goals, providing them with the prerequisite skills for a successful transition into Year One and the National Curriculum

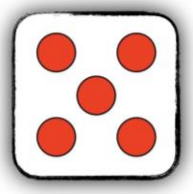
LINKS TO CALCULATION: DEVELOPMENT MATTERS IN THE EARLY YEARS FOUNDATION STAGE

22-36 months	30-50 months	40-60 months	Early Learning Goal	Exceeding ELG
Creates and experiments with symbols and marks representing ideas of number. Begins to make comparisons between quantities. Uses some language of quantities, such as '*more*' and '*a lot'*. Knows that a group of things changes when something is added or taken away	Beginning to represent numbers using fingers, marks on paper or pictures. Compares 2 groups of objects, saying when they have the same number. Separates a group of 3 or 4 objects in different ways, beginning to recognize that the total is still the same	Says the number that is one more than a given number. Finds 1 more or 1 less from a group of up to 5 objects, then 10 objects. In practical activities and discussions, beginning to use the vocabulary involved in adding and subtracting. Records, using marks that they can interpret and explain	Children count reliably with numbers from 1 to 20, place them in order and say which number is 1 more or 1 less than a given number. Using quantities and objects, they add and subtract 2 single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing	Children estimate a number of objects and check quantities by counting up to 20. They solve practical problems that involve combining groups of 2,5 or 10, or sharing into equal groups

The following knowledge and skills should be in place before moving on to carrying out calculation:

- Recite number names in order-up to at least 5, and then up to 10
- Count up to at least five objects accurately using one to one correspondence, (saying one number name for each objects)
- Cardinality-know that the last number said when counting represents the total in the set
- Know that numbers identify how many objects are in a set and beginning to recognize some written numerals

- Accurately count a small group of objects that cannot be moved
- Accurately count out a small group of objects from a larger set
- Subitising-recognising small groups of objects without counting



"5"

- Conservation of number- move around, partition or recombine small groups, (up to 4 or 5), and recognise that the total remains unchanged
- Know that zero represents an empty set

FURTHER IMPLEMENTATION GUIDANCE

<table>
<tr><th colspan="5">NURSERY</th></tr>
<tr><td>Addition</td><td colspan="4">Children need to:
understand addition as combining two or more objects to 5, then 10
add one-digit numbers to 5, including zero
use and apply their understanding of, and fluency in addition to solve one-step problems that involve additions, using concrete objects (and pictorial representation when appropriate)</td></tr>
<tr><td>Subtraction</td><td colspan="4">Children need to:
understand subtraction as ‘taking away’ (counting back)
solve one-step problems that involve subtraction, using concrete objects and pictorial representations
use of models and images: concrete objects/ pictorial representations</td></tr>
<tr><td>Multiplication</td><td colspan="4">Children will experience equal groups of objects</td></tr>
<tr><td>Division</td><td colspan="4">Children need to:
understand division through sharing small quantities, initially between two</td></tr>
<tr><td>Vocabulary

Main focus: one, two, three, four, five; 1 2 3 4 5

Familiarity with number names/ numerals: 1- 26 maximum number in their class; and 1-31 days in the month</td><td>Addition
Number
How many
Compare
Same
Different
More less fewer
Largest
Smallest</td><td>Subtraction
Take (away)
Leave
How many are left?
How many are gone?
One less</td><td>Multiplication
Lots of
Groups of</td><td>Division
Share
Same
One each, (two each)
Left, left over</td></tr>
<tr><td colspan="5">Maths pictures to talk about, for example using the Interactive White Board
Number songs and rhymes for example: Jack Works With One Hammer, 1,2,3,4,5 Once I Caught A Fish Alive, 1,2 Buckle My Shoe, Two Little Dickie Birds, Here Is The Beehive, 5 Currant Buns</td></tr>
<tr><td colspan="5"></td></tr>
</table>

RECEPTION	
Addition	Children need to: • Understand addition as combining two or more groups of objects • Understand addition as counting on • Represent and use number bonds within 10 • Represent and use number bonds within 10 • Add two single-digit numbers up to and including 9+9 • Recall doubles of all numbers to 6 • Read, write and interpret mathematical statements involving (+) and equals(=) signs • Solve one-step problems that involve addition, using concrete objects and pictorial representations • Solve one-step problems that involve addition in familiar contexts, eg money • Use of models and images: concrete objects/ pictorial representations and number tracks and number lines
Subtraction	Children need to: • Understand subtraction as 'taking away' (counting back) • Subtract two single-digit numbers • Read, write and interpret mathematical statements involving subtraction (-) and equals (=) signs • Solve one-step problems that involve subtraction, using concrete objects and pictorial representations • Solve one-step problems that involve subtraction in familiar contexts, for example money • Use concrete objects/ pictorial representations • Use of number tracks and number lines: 'take away' (counting back)
Multiplication	Children need to: • Understand multiplication through grouping small quantities • Understand the link between multiplication and doubling • Solve one-step problems involving multiplication, by calculating the answer using concrete objects, pictorial representations and arrays with the support of an adult • Solve one-step problems that involve multiplications in familiar contexts • Use of models and images: concrete objects/ pictorial representations
Division	Children need to: • Understand division through sharing small quantities between 2, 5 and 10 • Use and apply their understanding of, and fluency in, division to solve one step problems involving division, by calculating the answer using concrete objects, pictorial representations • Use of models and images: concrete objects/ pictorial representations

Vocabulary used in Power Maths (Reception)	One two three four five six seven eight nine ten elven twelve thirteen fourteen fifteen sixteen seventeen eighteen nineteen twenty (1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20)	number how many compare same different more less fewer largest smallest first then now every none missing number greater larger smaller add take away equal halve double	odd one out order arrange group collections represent show total altogether next after describe sort object part-whole model whole part each size shape colour pattern add together number story addition story	count on count forward count back count backwards methods solutions five frame ten frame cube counter bead string method solution

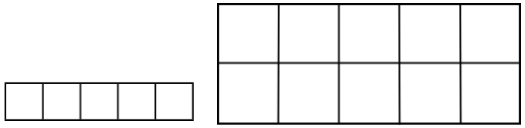
- Maths pictures to talk about, for example using the Interactive White Board
- Number songs and rhymes as Nursery, plus: 5 Little Speckled Frogs, 5 Flying Men, Alice The Camel, 5 Little Ducks, 5 Little Monkeys, 10 Green Bottles, 10 Fat Sausages, 10 In The Bed
- Rocket Launch: 10,9,8.7.6.5.4.3.2.1.zero!

Power Maths Overview (Reception)

Term	**Area to be covered** (*work other than number is in italic*)
Autumn 1	**Unit 1: Numbers to 5** Counting amounts up to 5. Represent numbers up to 5 in concrete and pictorial ways as well as linking an amount to the numerals 1,2,3,4 and 5. **Unit 2: Sorting** Recognising similarities and differences in sets of objects. Sorting into 2 groups based on size, colour and shape. Finding out that groups can be sorted in different ways and into more than two groups.
Autumn 2	**Unit 3: Comparing groups within 5** Comparing two groups of identical and non-identical objects saying which group has more, fewer or the same. **Unit 4: Change within 5** Find one more and one less than a given number within 5 using concrete objects and pictures to help them. Use role play and first, then, now stories to explore one less. ***Unit 5: Time*** *Introduce the concept of the day and the order of events in a day. Ordering familiar events using clues from pictures. Introduce the idea that the clock tells the time, without having to read the clock.*
Spring 1 **and** **Spring 2**	**Unit 6: Number bonds within 5** Introduce the vocabulary of whole and part, and practise breaking a whole into parts using a part-whole model. **Unit 7: Numbers to 10** Learn to count up to 10 objects using concrete representations, including the 10 frame. Introduce the numbers 6,7,8,9 and 10 and use the ten frame to scaffold their counting. **Unit 8: Comparing numbers within 10** Compare numbers up to 10. Focus on comparing groups of objects where the objects differ in size. **Unit 9: Addition to 10** Using the part-whole model, identify the whole and parts in different orientations and understanding that the combined parts make the whole. **Unit 10: Number bonds to 10** Explore number bonds to 10 using a variety of representations. Progress from seeing the concrete representations to pictorial representations. Use counters on a ten frame. ***Unit 11: Shape and space*** *Develop their vocabulary to describe the position of objects. Look at items from different viewpoints and draw representations of the items they see. Focus on the properties of 3D shapes through hands on exploration and play.*

	Introduce the names of 2D shapes and some words to describe their properties. Find 2D shapes in the world around them.
Summer 1 **and** **Summer 2**	***Unit 12: Exploring patterns*** *Recognising, continuing and building simple patterns. Learn AB, ABB and then AAB patterns. Discover that patterns can be created using various shapes, colours, sizes, actions and sounds.* **Unit 13: Counting on and counting back** Learn to count on from a given number in order to add. Use first, then, now structure to identify what number they are counting on from, and how many they are counting on. Learn to count back from a given number in order to subtract. Use first, then, now structure to identify what number they are counting back from, and how many they are counting back. **Unit 14: Numbers to 20** Focus on counting forwards and backwards to and from 20. Explore one more and one less than numbers to 20, as well as comparing numbers. Represent numbers within 20. **Unit 15: Numerical patterns** Explore what is meant by doubling and will learn to recognise and represent doubles to double 5 in a range of contexts. Focus on halving quantities by sharing into two equal groups. Make links to the fact that halving is the opposite, or inverse, of doubling. Explore odd and even numbers in familiar contexts. Use understanding of equal groups to identify odd and even numbers ***Unit 16: Measure*** *Introduce length, height and distance. Use words longer, shorter, and taller to compare length. Line up objects to compare them and explore non-standard units of measurement.* *Introduce the concept of weight, compare two items and learn how to balance scales.* *Use everyday language to compare volume and capacity using the terms full, empty, nearly full and nearly empty in the context of liquids (water) and solids (sand).*

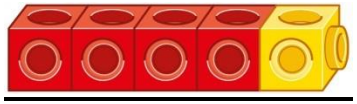
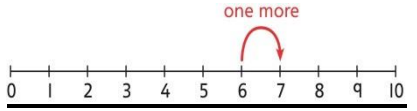
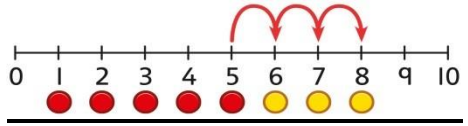
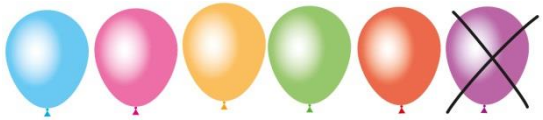
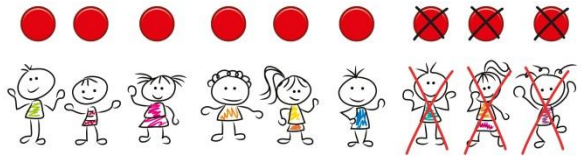
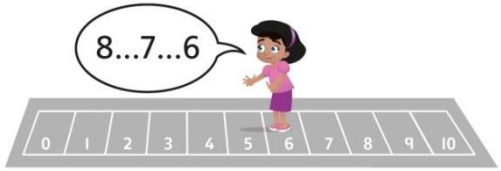
Frequently used resources

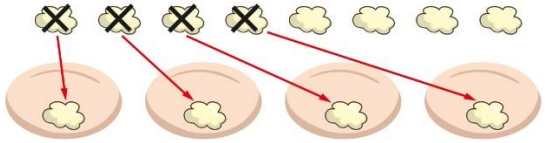
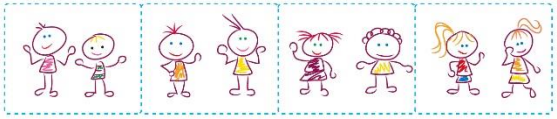


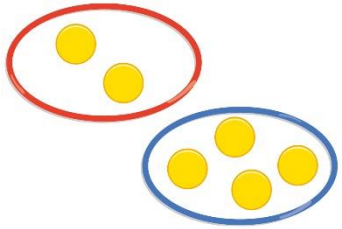
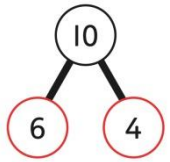
Interactive White Board Example

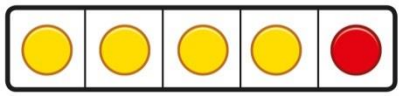
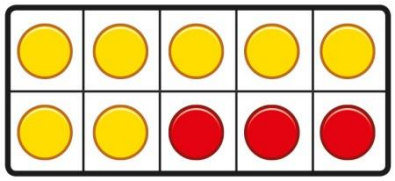
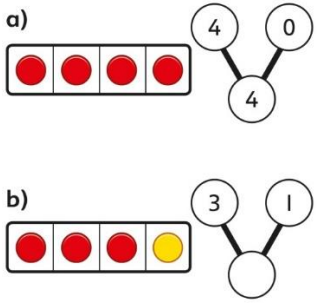
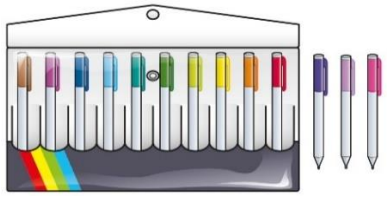
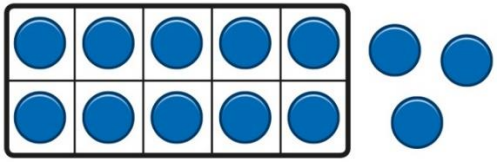
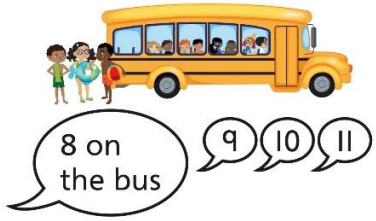
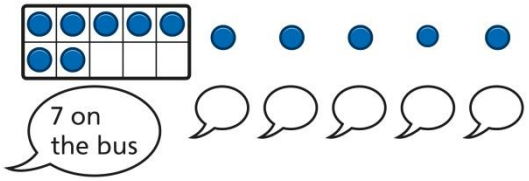
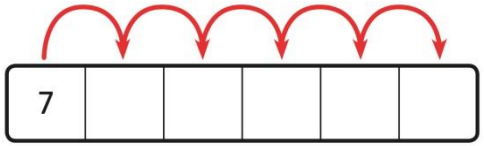
Interactive White Board Example

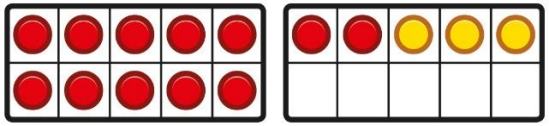
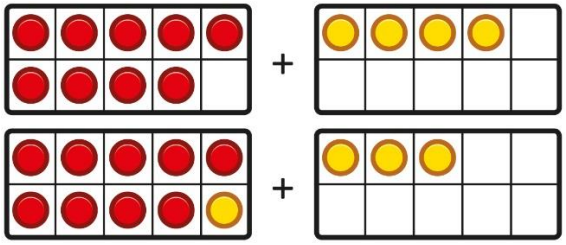
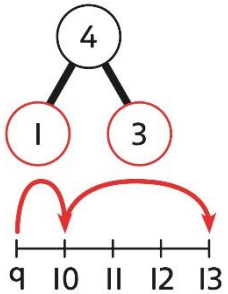
Further explanation regarding the progression from concrete to pictorial to abstract (Relevant sections taken from Year 1 to 6 school calculation policy 2020

EYFS: Nursery			
Year N	**Concrete**	**Pictorial**	**Abstract**
Counting and adding more	Children add one more person or object to a group to find one more.	Children add one more cube or counter to a group to represent one more.  *One more than 4 is 5.*	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.* Learn to link counting on with adding more than one.  *5 + 3 = 8*
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.*	Children draw and cross out or use counters to represent objects from a problem.  9 – ☐ = ☐ There are ☐ children left.	Children count back to take away and use a number line or number track to support the method.  *9 − 3 = 6*

Recognising and making equal	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.*

EYFS: Reception (As Nursery and continued)			
Year R	**Concrete**	**Pictorial**	**Abstract**
Understanding part-part-whole relationship	Sort people and objects into parts and understand the relationship with the whole.  *The parts are 2 and 4. The whole is 6.*	Children draw to represent the parts and understand the relationship with the whole.  *The parts are 1 and 5. The whole is 6.*	Use a part-whole model to represent the numbers.   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*	Use five and ten frames to represent key number bonds.  *5 = 4 + 1*  *10 = 7 + 3*	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*
Understanding teen numbers as a complete 10 and	Complete a group of 10 objects and count more.  *13 is 10 and 3 more.*	Use a ten frame to support understanding of a complete 10 for teen numbers.  *13 is 10 and 3 more.*	*1 ten and 3 ones equal 13.* *10 + 3 = 13*
Adding by counting on	Children use knowledge of counting to 20 to find a total by counting on using people or objects. 	Children use counters to support and represent their counting on strategy. 	Children use number lines or number tracks to support their counting on strategy.  7 + 5 = ☐

Adding the 1s	Children use bead strings to recognise how to add the 1s to find the total efficiently.  *2 + 3 = 5* *12 + 3 = 15*	Children represent calculations using ten frames to add a teen and 1s.  *2 + 3 = 5* *12 + 3 = 15*	Children recognise that a teen is made from a 10 and some 1s and use their knowledge of addition within 10 to work efficiently. *3 + 5 = 8* *So, 13 + 5 = 18*
Bridging the 10 using number bonds	Children use a bead string to complete a 10 and understand how this relates to the addition.  *7 add 3 makes 10.* *So, 7 add 5 is 10 and 2 more.*	Children use counters to complete a ten frame and understand how they can add using knowledge of number bonds to 10.  .	Use a part-whole model and a number line to support the calculation.  *9 + 4 = 13*