Written Calculations Policy
EYFS

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Approved By:	Full Governing Body
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Rationale

This policy contains the key pencil and paper procedures that will be taught within our school. It has been written to ensure consistency and progression throughout the school and reflects a whole school agreement. The calculation policy has been devised to meet requirements of the National Curriculum 2014 for the teaching and learning of mathematics, and is also designed to give pupils a consistent and smooth progression of learning in written calculations across the school. Please note that early learning in number and calculation in Reception follows the 'Development Matters' EYFS document, and this calculation policy is designed to build on progressively from the content and methods established in the Early Years Foundation Stage.

Teaching and Learning

This calculation policy should be used to support children to develop a deep understanding of number and calculation. At Grimsdyke School, we use 'White Rose' as a format as a basis for our planning and use the philosophy of: fluency, reasoning and problem solving. White Rose also follows the Concrete – Pictorial – Abstract approach to teaching maths. This policy has been designed to teach children through the use of concrete, pictorial and abstract representations. It is important that conceptual understanding, supported by the use of representation, is secure for all procedures. Reinforcement is achieved by going back and forth between these representations.

- Concrete representation - a pupil is first introduced to an idea or skill by acting it out with real objects. This is a 'hands on' component using real objects and is a foundation for conceptual understanding.
- Pictorial representation - a pupil has sufficiently understood the 'hands on' experiences performed and can now relate them to representations, such as a diagram or picture of the problem. This helps children make the connection between the physical object and abstract levels of understanding, which is the stage they move onto next.
- Abstract representation - The abstract stage brings in mathematical symbols, for example +, -, x, ÷ to indicate addition, subtraction, multiplication and division. This is used when a pupil is secure in their understanding of representing problems by using mathematical notation, for example 12 x 2 = 24.

Planning, Progression and Continuity

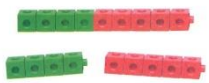
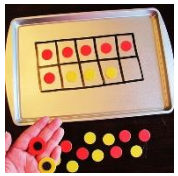
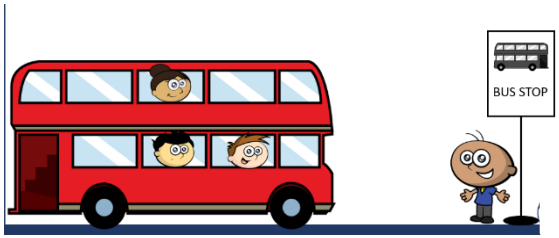
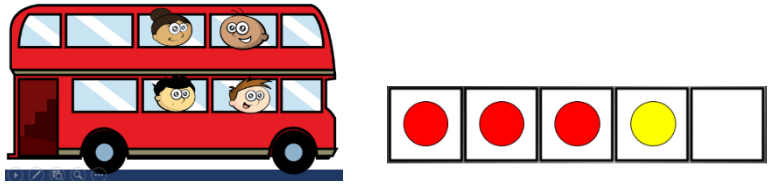
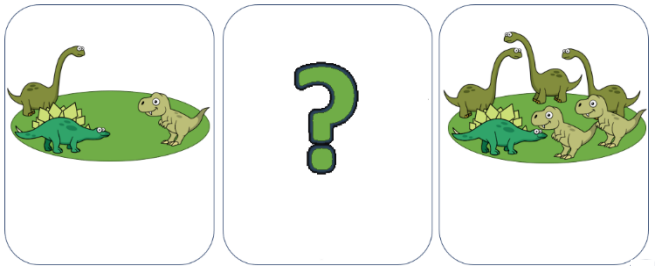
The calculation policy is organised according to age stage expectations as set out in the National Curriculum 2014, however it is vital that pupils are taught according to the year group that they are currently working at and then given 'mastery' opportunities within their age-related expectations in order to fully embed the concepts learned. Furthermore, if a teacher feels a child is ready to move onto the next stage of a calculation which is in the next year group's expectations, then this should be facilitated.

At the centre of the mastery approach to the teaching of mathematics is the belief that all children have the potential to succeed. They should have access to the same curriculum content and, rather than being extended with new learning, they should deepen their conceptual understanding by tackling challenging and varied problems. Similarly, with calculation strategies, children must not simply rote learn procedures but demonstrate their understanding of these procedures through the use of concrete materials and pictorial representations. This policy outlines the different calculation strategies that should be taught and used in Year 1 to Year 6 in line with the

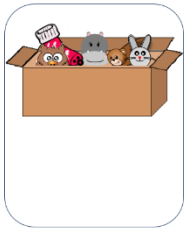
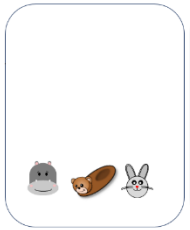
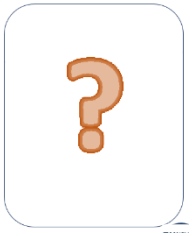
requirements of the 2014 Primary National Curriculum. Each operation is broken down into skills for the year group and shows recommended models and visuals to support the teaching of the corresponding concepts alongside.

'Real things and structured images enables children to understand the abstract. The concrete and the images are a means for children to understand the symbolic so it's important to move between all modes to allow children to make connections'. (Morgan, D. 2016)

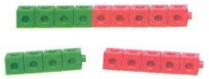
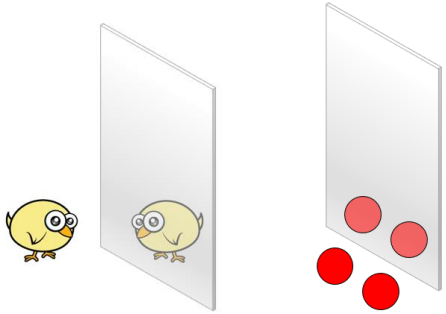
Addition

Objectives	Concrete	Pictorial
• *Addition involves putting groups together or counting on* • *To know the number bonds up to 10* • *Say which number is one more than a given number for numbers to 20.* • *They can solve addition problems for numbers to 20 using practical apparatus.*	Use toys and general classroom resources for children to physically manipulate.   Use specific maths resources such as counters, connecting cubes, Numicon etc.   Use visual supports such as ten frames, part part whole and addition mats, with the physical objects and manipulatives.  	Adding one more   How many have been added? 
Vocabulary • *Number* • *More* • *Less* • *Add* • *More* • *Make* • *Sum* • *Total* • *Altogether*		

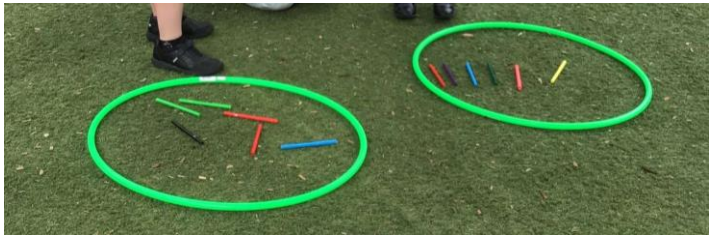
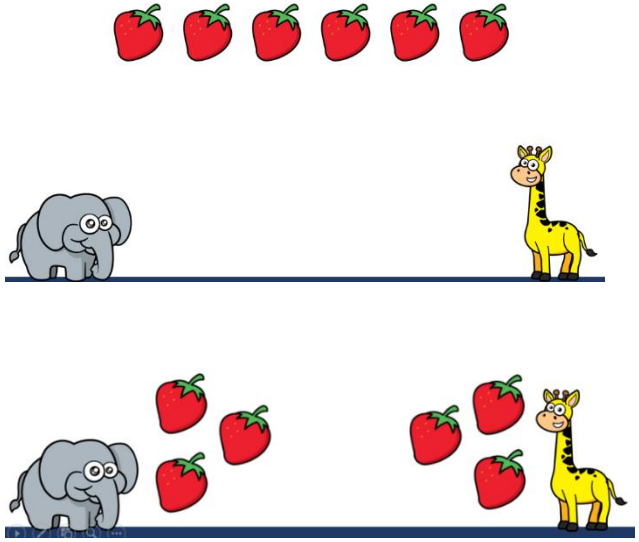
Subtraction

Objectives	Concrete	Pictorial
• *Subtraction involves removing items from a group or counting back* • *To know the number bonds up to 10* • *Can count on or back to find the answer when adding or subtracting.* • *They can solve subtraction problems for numbers to 20 using practical apparatus.*	Use toys and general classroom resources for children to physically manipulate.   Use specific maths resources such as counters, connecting cubes, Numicon etc.  	Subtracting   
Vocabulary		
• *Number* • *Less* • *Take away*		

Multiplication

Objectives	Concrete	Pictorial
• *Doubling involves combining two equal groups* • *They can double numbers to 10.* • *Can solve simple problems using apparatus that involve doubling*	Doubling one - eyes  Doubling with fingers  Use toys and general classroom resources for children to physically manipulate.   Use specific maths resources such as counters, connecting cubes, Numicon etc.  	Doubling 
Vocabulary • *Double* • *Groups*		

Division

Objectives	Concrete	Pictorial
• *Halving involves splitting something into two equal groups or pieces* • *Sharing mathematically involves being fair and giving an equal amount to each group* • *They can halve numbers to 20.* • *Can solve simple problems using apparatus that involve halving* • *They can share out an amount in a fair, mathematical way.*	Physical items halved  Sharing physical objects 	Sharing  Grouping 
Vocabulary • *Half* • *Share* • *Fair*		

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