



Loved, Valued, Challenged



CALCULATION

POLICY

Signed: Tammie McNamara (Headteacher)

Date: November 2021

Signed: Maria Williams (Chair of Governors)

Date: November 2021

November 2021

Date of next review: November 2022

Our Mission Statement

Loved

We love one another as Jesus taught us - our friends, our families and those who we may never meet.

Valued

We value everyone - everyone is important; pupils, staff, parents, governors and members of the community- no matter their race, religion ability or need. We try to live like Jesus taught us.

Challenged

We challenge each other - not only with our learning but challenge each other to be more merciful to others, have a little more understanding of others' needs and challenge each other to be better people.

Rationale

This policy outlines a model progression through written strategies for addition, subtraction, multiplication and division in line with the National Curriculum. Through the policy, we aim to link key manipulatives and representations through concreate, pictorial and abstract methods. School wide policies, such as this, ensure consistency of approach, enabling children to progress stage by stage through models and representations they recognise from previous teaching. By providing children with the opportunity to work on different representations of the same mathematical idea allows for deeper conceptual understanding and fluency. As children move at the pace appropriate to them, teachers will be presenting strategies and equipment appropriate to children's level of understanding. However, it is expected that the majority of children in each class will be working at age-appropriate levels as set out in the National Curriculum 2014 and in line with policy's 'end of year' targets. While this policy focuses on written calculations in mathematics, we recognise the importance of the mental strategies and known facts that form the basis of all calculations. At the end of each strand, outline the mental strategies that children are expected to develop throughout the school.

Calculation policy: Addition

Key language: sum, total, parts and wholes, plus, add, altogether, more, 'is equal to' 'is the same as'.

Concrete	Pictorial	Abstract
Combining two parts to make a whole (use other resources too e.g. eggs, shells, teddy bears, cars).	Children to represent the cubes using dots or crosses. They could put each part on a part whole model too.	4 + 3 = 7 Four is a part, 3 is a part and the whole
Counting on using number lines using cubes or Numicon.	A bar model which encourages the children to count on, rather than count all.	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







Calculation policy: Subtraction

Key language: take away, less than, the difference, subtract, minus, fewer, decrease.





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Calculation policy: Multiplication

Key language: double, times, multiplied by, the product of, groups of, lots of, equal groups.

Concrete	Pictorial	Abstract
Repeated grouping/repeated addition 3×4 4 + 4 + 4 There are 3 equal groups, with 4 in each group. ()	Children to represent the practical resources in a picture and use a bar model.	3 × 4 = 12 4 + 4 + 4 = 12
Number lines to show repeated groups- 3 × 4	Represent this pictorially alongside a number line e.g.:	Abstract number line showing three jumps of four. $3 \times 4 = 12$

Use arrays to illustrate commutativity counters and other objects can also be used. $2 \times 5 = 5 \times 2$ 2 lots of 5 5 lots of 2	Children to represent the arrays pictorially.	Children to be able to use an array to write a range of calculations e.g. $10 = 2 \times 5$ $5 \times 2 = 10$ 2 + 2 + 2 + 2 + 2 = 10 10 = 5 + 5
Partition to multiply using Numicon, base 10 or Cuisenaire rods. 4 × 15	Children to represent the concrete manipulatives pictorially.	Children to be encouraged to show the steps they have taken. 4×15 $10 \ 5$ $10 \times 4 = 40$ $5 \times 4 = 20$ 40 + 20 = 60 A number line can also be used
Formal column method with place value counters (base 10 can also be used.) 3 × 23	Children to represent the counters pictorially. $ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Children to record what it is they are doing to show understanding. 3×23 $3 \times 20 = 60$ $\land 3 \times 3 = 9$ 20 3 $60 + 9 = 6923\times 369$
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Calculation policy: Division

Key language: share, group, divide, divided by, half.











