

Horsford Church of England VA Primary School



Mathematics/Calculation Policy

September 2022



COMPASSION COURAGE RESPONSIBILITY

Calculation Policy

Introduction

At Horsford CE VA Primary School we teach calculation with understanding, and not just as a process that is to be remembered. This Calculation Policy clarifies progression in calculation with examples that are 'mathematically transparent', in other words the way the calculation works is clear and supports both the development of mathematical concepts and closely links it to the mental strategies that are taught alongside the written methods. These methods are linked to the White Rose scheme of work that the teachers use throughout the school to plan each of their maths lessons.

Aims of the policy

Our aim is that children leave Horsford Primary School with a deep understanding of place value and how to manipulate number using the four operations. Every child should have a secure, competent and confident method for each of these. We aim:

- To ensure consistency and progression in our approach to calculation and enable a smooth transition between year groups and phases.
- To ensure that children have a good understanding of mathematical concepts, with the use of manipulatives to support this.
- To ensure that children develop an efficient, reliable, formal written method of calculation for all operations.
- To ensure that children can use these methods accurately with confidence and understanding.
- To ensure pupils understand important concepts and make connections within mathematics.
- To ensure pupils show high levels of fluency in performing written and mental calculations.
- To ensure that pupils are ready for the next stage of learning and have been given strong foundations in mental methods, the use of practical equipment, allowed to explore jottings in a range of forms and then to move onto more formal recording using a strong knowledge of place value, number lines labelled or blank, partitioning before eventually using compact written methods.
- To ensure that pupils are competent in fluency, reasoning and problem solving and can make informed and appropriate choices about the methods they wish to use (mental or written) to solve mathematical problems efficiently and effectively.

Teaching and learning in the EYFS

In the statutory framework for EYFS, an Early Learning Goal is the standard children are expected to achieve by the end of their reception year. The ELG relevant to calculations is Number:

- Have a deep understanding of number to 10, including the composition of each number.
- Subitise (recognise quantities without counting) up to 5.
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some up to 10.

Calculations will be taught in a purposeful, practical way and children will use play and exploration to acquire the relevant mathematical skills to solve them. A large majority of mathematical work is practical, and learning will happen in many different contexts around the classroom and outside. Some mathematical concepts relating to calculations will be teacher led and children can also freely explore these concepts through a variety of different activities and resources set up each day. Learning is repeated using different resources and representations to embed understanding.

Teaching and learning in KS1 and KS2

The policy is set out in subjects: addition, subtraction, multiplication and division. Within each specific area there is a progression of skills, knowledge and layout for practical and written methods that has been agreed by all staff (see Appendices). The calculation strategies which will be used will reflect this ideology – moving from concrete to pictorial and then abstract recording, leading to more formal written methods. Mental methods and strategies will work in partnership with these methods. It has been agreed by all staff that a variety of mental calculation methods will be taught and that recall of facts will be taught in school and tested regularly.

The basis of our maths calculation policy is that mental and written methods are integral to each other and should not be seen as taking separate paths but developed in conjunction with each other. It is envisaged that the development of mental skills will lead to jottings, (which support mental calculation) and then into more formalised jottings in the form of number lines and partitioning which in turn leads to expanded column methods and ultimately compact algorithms. We believe it is vital to always show the links between operations and not teach them in isolation or without showing, in practical problem solving activities and across all mathematical topics, how these operations can be applied.

In line with the National Curriculum aims, manipulatives should be used to develop an understanding of the mathematical concepts and to build firm foundations in calculation. Some children will prefer some representations more than others and may not use all of them. The children will progress at different rates and so practical handling of resources is essential to aid secure understanding **at all stages**.

The manipulatives are not to be used sequentially but as and when they are appropriate. As a new concept is introduced the use of a previous representation may help clarify and aid understanding, e.g. using straws for fractions, where the bundle represents 1 instead of 10 and therefore each straw represents $1/10^{\text{th}}$.

Fluency requires a bank of key facts which the children can recall at speed. These must be taught and practised regularly so that more complex aspects of computation are not halted by poor factual knowledge. **The facts to be learnt off by heart, as stated in the National Curriculum, are in the Skills and Progression Map.**

From Year 4 onwards children should be equipped with, and are able to choose from, the most appropriate of a range of mental, informal written and formal written methods. Although this policy exemplifies written procedures, the ability to calculate mentally lies at the heart of mathematics: it should be taught systematically and regularly as it is the essential basis of the subject.

These will be assessed through: assessment, tracking, pupil progress meetings, performance management, moderation and standardisation.

Vocabulary

It is important that staff always use correct mathematical language and encourage this from every pupil. This will take place in class discussions as well as through oral and written feedback, next steps and target setting. The maths vocabulary for each year group can be found on the skills and progression map, with the key vocabulary highlighted in bold.