



Written Calculation Policy

Signed: ----- Date: -----
Chair of Governors

Signed: ----- Date: -----
Headteacher

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Written Calculation Policy

The intent of our Mathematics curriculum is to be accessible to all and to maximise the development of every child's ability and academic achievement. Every child has an **equal** opportunity to access maths at their level and pace and this is catered for through differentiation to enhance a **safe** learning environment. We want children to make rich connections across Mathematical ideas to develop fluency, reasoning and problem solving and their taught **resilience** will enhance and develop these skills. Within (and beyond) lessons, children are challenged with "next steps" and extensions, creating a culture, where, within lessons, our learners want to be **ambitious** in all that they access and achieve. Our pupils will learn to apply their Mathematical knowledge not only within their Mathematics lessons but also across the curriculum, for example in Art, Science, Geography and DT. We want our pupils to understand that a confident understanding of Mathematics is the bedrock for Science, Technology and Engineering (STEM), necessary for the management of every day finances and a crucial component of most forms of employment. As our pupils progress, we intend that they: be able to calculate swiftly and accurately; have the ability to reason mathematically; have an appreciation of the beauty and power of mathematics and a sense of enjoyment and **curiosity** about the subject.

Statement

At Singlewell, we believe that children should be introduced to the processes of calculation through practical, oral and mental activities. As a school we recognise the important link between mental, practical and written methods to support the development of children's understanding. This policy contains the key pencil and paper procedures that are to be taught throughout the school. It has been written to ensure consistency and progression throughout the school. Although the focus of this policy is on pencil and paper procedures (for the 4 operations and the use of manipulatives) it is important to recognise that the ability to calculate mentally is key. Therefore, please refer to the Mental Maths Calculation and Mastery policies. This policy has been developed in line with the new National Expectations for Numeracy, September 2014.

Aims

- To ensure a consistent and progressive approach exists within the school to secure good to outstanding progress in written calculations and use of manipulatives.
- To ensure that mental calculation is not at the exclusion of written recording and use of physical apparatus. Representative strategies and mental calculation are complementary strategies as in all methods there is an element of mental processing.
- For children to be able to use written recordings and manipulatives to clarify their thinking and support/extend the development of more fluent and sophisticated mental strategies.
- For children to select and utilise methods of written calculation and manipulatives independently and be given the freedom and encouragement to develop their own methods. Although each method will be taught in the year group specified, children should not be discouraged from using previously taught methods with which they are secure, while the new concepts are becoming embedded. In addition, if children are secure in one form of calculation differentiation should provide children with the opportunity to progress to a more sophisticated form.
- For children to reflect upon which method to use to solve a problem and ask questions such as, 'Can I do this in my head or do I need equipment to help me?', 'Do I need to use a written method?' then 'Is my answer sensible?'

- For children to be able to clearly explain methods of recording/representation and justify why their answers are correct using sound mathematical vocabulary. Therefore strong speaking and listening opportunities underpin good mathematics teaching.
- For KS2 children to develop an efficient, reliable, compact written method of calculation for each operation that they can apply with confidence and understanding when undertaking calculations that they cannot carry out solely mentally.
- To share progress in written calculations with parents so that they have the confidence and knowledge to support their children at home with their mathematical development.
- For children to use a calculator effectively, using their mental skills to monitor the process, check the steps involved and decide if the numbers displayed make sense.

Building on the Early Learning Goals Pupils' prior experience of mathematics includes:

- Counting and using numbers to at least 10 in familiar contexts
- Recognising numerals 1 to 20
- Talking about and creating simple patterns
- Beginning to understand addition as combining two groups of objects and subtraction as 'taking away'
- Describing the shape and size of solid and flat shapes
- Using everyday words to describe position
- Using early mathematical ideas to solve practical problems.

When are children ready for written calculations?

Addition and subtraction

- Do they know addition and subtraction facts to 20?
- Do they understand place value and can they partition numbers?
- Can they add three single digit numbers mentally?
- Can they add and subtract any pair of two digit numbers mentally?
- Can they explain their mental strategies orally and record them using informal jottings?

Multiplication and division

- Do they know the 2, 3, 4, 5 and 10 time table?
- Do they know the result of multiplying by 0 and 1?
- Do they understand 0 as a place holder?
- Can they multiply two and three digit numbers by 10 and 100?
- Can they double and halve two digit numbers mentally?
- Can they use multiplication facts they know to derive mentally other multiplication facts that they do not know?
- Can they explain their mental strategies orally and record them using informal jottings? The above lists are not exhaustive but are a guide for the teacher to judge when a child is ready to move from informal to formal methods of calculation.