Calculation Policy

St Andrew's Church of England Primary School

We believe that 'Everyone is different. Everyone is special'. As Jesus taught us to love unconditionally, so we strive to nurture respect for all; to provide a rich and stimulating curriculum that considers the individual; and to care for the intellectual, social and spiritual well-being of our whole school community - encouraging positive engagement with the wider world, as affirmed through our school values and parable of the Good Samaritan.

Jesus said, "Love the Lord your God …' and, 'Love your neighbour as yourself." Luke 10:27

At St Andrew's we are committed to keeping pupils and staff safe. Our school policies are an essential part of the way we safeguard all members of our diverse school. We support democracy, the rule of law, individual liberty, mutual respect and tolerance of different faiths and beliefs. These principles help us to listen to each other and learn from each other to create a safe and rich learning environment for pupils and staff alike.

Approved by:	TLIS	Date: 16/1/25
Last reviewed on:	January 2025	
Next review due by:	January 2027	

St Andrew's CE Primary School

Calculation Policy

OVERVIEW

This calculation policy has been written in line with the revised National Curriculum for Mathematics (2014) and using the White Rose as a scheme by which to deliver these objectives. White Rose calculation policies are broken down as follows:

- Reception (Reception class follow the EYFS objectives so their calculation stages are provided here for guidance only) (click here for document)
- Years 1- 6 Addition & Subtraction, Multiplication & Division (click here for document). This document shows the progression from concrete, pictorial and abstract for each year group by operation (addition, subtraction, multiplication & division)

Objectives of the National Curriculum are included within each year group (full objectives can be found on the DFE website). In addition, an operation manual (click here for link) is used by teachers to ensure consistency in the teaching and learning through the White Rose scheme at St Andrew's.

AIMS OF THE POLICY

- To ensure consistency and progression in whole-school calculation
- To ensure that each child becomes numerate
- To ensure that children develop an efficient, reliable method of calculation for all four operations, both mentally and written
- To ensure that children can chose the correct method and use it accurately and with confidence
- To give children the opportunities to experience mathematics through real problems, and to use and apply skills in a variety of situations
- To promote the use of mathematical language, through reasoning opportunities

TEACHING OF MATHS AT ST ANDREW'S

Maths is taught on a daily basis in school. Plans for these lessons are from the White Rose scheme. Each teacher will adapt the general plans to ensure that they are personalised for the needs of their class. As long as activities and teaching methods are consistent with those in the White Rose calculation policies and St Andrew's operation manual (documents referenced above), objectives may be taught in a manner in which the teacher feels appropriate.

St Andrew's uses PUMA (Progress in Understanding Mathematics Assessment) or SATs (in Year 2 and Year 6) once a term to aid teacher assessment (see Assessment Policy).

In addition to White Rose plans and PUMA/ SATs assessment, teachers may wish to supplement maths exposure within their class, such as with early morning Maths workbooks or Doodle Maths. Like the supplementing of activities within daily lessons, this needs to be done in line with this policy.

GUIDANCE (points to note)

Children will use mental methods initially but for calculations they cannot do in their head, this policy outlines the written methods used at St Andrew's.

Ensure that children are confident with the methods outlined in the previous year's guidance before moving on. If at any time children are consistently making errors in their calculation, revisit the previous year's guidance before progressing.

This policy, in conjunction with the White Rose scheme, will ensure a consistent, whole-school approach to maths teaching. By familiarising themselves with previous or following years' methods, teachers will ensure that they are teaching with clear progression in mind.

Use the images within the policy as part of the class maths display so that children are very clear on what they are learning and why.

Children may use a variety of different methods by the time they reach Years 5 and 6, for example if they use different methods at home, or used them in a previous school etc. If 'their' method is different to that being taught at St Andrew's but it *works* for them, we shouldn't discourage them from using it. If, however, they have inconsistent results, encourage them to adopt the methods that are being taught as outlined in this policy.

Ideas for resources and further examples follow each year's guidance. It is not designed to be exhaustive and teachers are encouraged to use whichever apparatus they feel illustrates a concept and deepens understanding. Vocabulary associated with maths can be found in the glossary of the calculation policies.

OVERVIEW OF KEY STAGES

A breakdown of key objectives for each year group in Mathematics is available on the website: St Andrew's Church of England Primary School, Oxford - Maths

EYFS

The EYFS provision enables children to learn about numeracy through outdoor and indoor environment. This includes real-life role play using number (shops, building, home) and a number-rich environment. Whole class input teaching numbers to 10 for a deeper understanding of the number system and subitising is reinforced through small group tasks and activities. Development Matters is used as a way to track pupil progress against early learning goals related to numeracy.

KEY STAGE 1

Children in Years 1 and 2 will be given a really solid foundation in the basic building blocks of mental and written arithmetic. Through being taught place value, they will develop an understanding of how numbers work, so that they are confident in 2-digit numbers and beginning to read and say numbers above 100.

A focus on number bonds, first via practical hands-on experiences and subsequently using memorisation techniques, enables a good grounding in these crucial facts, and ensures that all children leave Year 2 knowing the pairs of numbers which make all the numbers up to 10 at least. They will also have experienced and been taught pairs to 20. Their knowledge of number facts enables them to add several single-digit numbers, and to add/subtract a single digit number to/from a 2-digit number.

Another important conceptual tool is their ability to add/subtract 1 or 10, and to understand which digit changes and why. This understanding is extended to enable children to add and subtract multiples of ten to and from any 2-digit number. The most important application of this knowledge is their ability to add or subtract any pair of 2-digit numbers by counting on or back in tens and ones. Children may extend this to adding by partitioning numbers into tens and ones.

Children will be taught to count in 2s, 3s, 5s and 10s, and will have related this skill to repeated addition. They will have met and begun to learn the associated 2x, 3x, 5x and 10x tables. Engaging in a practical way with the concept of repeated addition and the use of arrays enables children to develop a preliminary understanding of multiplication, and asking them to consider how many groups of a given number make a total will introduce them to the idea of division. They will also be taught to double and halve numbers, and will thus experience scaling up or down as a further aspect of multiplication and division.

Fractions will be introduced as numbers and as operators, specifically in relation to halves, quarters and thirds.

LOWER KEY STAGE 2

In Lower KS2, children build on the concrete and conceptual understandings they have gained in the KS1 to develop a real mathematical understanding of the four operations, in particular developing arithmetical competence in relation to larger numbers.

In addition and subtraction, they are taught to use place value and number facts to add and subtract numbers mentally and will develop a range of strategies to enable them to discard the 'counting in ones' or fingers-

based methods of Years 1 and 2. In particular, they will learn to add and subtract multiples and near multiples of 10, 100 and 1000, and will become fluent in complementary addition as an accurate means of achieving fast and accurate answers to 3-digit subtractions.

Standard written methods for adding larger numbers are taught, learned and consolidated, and written column subtraction is also introduced. This key stage is also the period during which all the multiplication and division facts are thoroughly memorised, including all facts up to the 12 x 12 table.

Efficient written methods for multiplying or dividing a 2-digit or 3-digit number by a single-digit number are taught, as are mental strategies for multiplication or division with large but friendly numbers, e.g. when dividing by 5 or multiplying by 20.

Children will develop their understanding of fractions, learning to reduce a fraction to its simplest form as well as finding non-unit fractions of amounts and quantities. The concept of a decimal number is introduced and children consolidate a firm understanding of one-place decimals, multiplying and dividing whole numbers by 10 and 100.

UPPER KEY STAGE 2

Children move on from dealing mainly with whole numbers to performing arithmetic operations with both decimals and fractions. They will consolidate their use of written procedures in adding and subtracting whole numbers with up to 6 digits and also decimal numbers with up to two decimal places.

Mental strategies for adding and subtracting increasingly large numbers will also be taught. These will draw upon children's robust understanding of place value and knowledge of number facts.

Efficient and flexible strategies for mental multiplication and division are taught and practised, so that children can perform appropriate calculations even when the numbers are large, such as 40,000 x 6 or 40,000 ÷ 8.

It is in Years 5 and 6 that children extend their knowledge and confidence in using written algorithms for multiplication and division. Fractions and decimals are also added, subtracted, divided and multiplied, within the bounds of children's understanding of these more complicated numbers, and they will also calculate simple percentages and ratios. Negative numbers will be added and subtracted.