St Anne's Algebra Policy

Date approved:	6th January, 2025
Date of review:	Summer Term 2025

Rationale:

This policy lays out the expectations for algebra, and has been created to support the teaching of a mastery approach to mathematics in line with the National Curriculum and the White Rose scheme, which forms the framework of our curriculum through its long- and medium-term planning outline and small steps.

A Mastery Approach:

A mastery approach to learning involves the following five "big ideas" of effective maths teaching:

Coherence -	a coherent learning progression offering deep and connected understanding
Representation and Structure	concrete, pictorial and abstract representations are carefully structured to help pupils "see the maths"
Mathematical Thinking -	looking for patterns and relationships, making connections, conjecturing, reasoning and generalising, communicating ideas using precise vocabulary
Fluency - - -	efficient, accurate recall of key number facts and procedures, allowing pupils to move between different contexts and representations, choosing strategies
Variation - - -	conceptual variation presents different representations of key features, while procedural variation presents different ways of proceeding through the learning journey (via scaffolding and support, etc)

Concrete – Pictorial – Abstract:

Mathematical understanding is developed through use of representations that are initially concrete (e.g. counters, multilink cubes, dienes, etc), and then pictorial (e.g. part-whole models, place value columns with images of counters in them, etc) to then facilitate abstract working (e.g. formal written methods).

If at any point a pupil is struggling with the abstract, they should revert to familiar pictorial and/or concrete materials/representations as appropriate. As children move through the different stages, representations should be modelled alongside each other to ensure a secure understanding is maintained. Children should only move onto the abstract method when they have a secure understanding of the concept through an appropriate concrete and pictorial representation. This policy should be used in conjunction with the St Anne's Mathematics policy, our Written Calculation Policies and the White Rose calculation policy, as well as our Key Instant Recall Facts documents, which we share with our families to supplement the learning children receive in school. Teachers are also encouraged to refer to the NCETM Ready-To-Progress Criteria resources in ascertaining when children are ready to move on to new learning.

Vocabulary:

Children will continually recap vocabulary learned in previous years to ensure that their understanding and usage of the terminology is fully developed, broad and specific in application. Vocabulary from previous years is included in each year group's columns in black, while new vocabulary that may not have been previously encountered is in green. Teachers are encouraged to check this list of vocabulary at the beginning and end of a relevant unit to ensure that they are modelling the full breadth and depth of vocabulary to the children, and that the children are using it in their verbal and written responses accurately and confidently.

Please see appendix 4 of the written calculation policies for notes on precise vocabulary, and for a comprehensive glossary, please see the separate document "NCETM Maths Glossary KS1-KS3" which is saved in PDF format with our calculation policies in the shared area.

Algebra Before Year 6

Algebra does not formally come into the curriculum until Year 6, however the underpinning understanding of finding missing numbers, values, quantities and digits, particularly in the case of missing-number and two-step word problems for the four operations, is evident throughout the curriculum. For more information on these, please refer to our written calculation policies and mental calculation policy. The concept of variables is also introduced throughout our coding units in Computing, so for more information on that please refer to our Purple Mash coverage documents.

Algebra in Year 6

Pupils should be taught to:

- use simple formulae
- generate and describe linear number sequences
- express missing number problems algebraically
- find pairs of numbers that satisfy an equation with 2 unknowns
- enumerate possibilities of combinations of 2 variables

Notes and guidance (non-statutory):

Pupils should be introduced to the use of symbols and letters to represent variables and unknowns in mathematical situations that they already understand, such as:

- missing numbers, lengths, coordinates and angles
- formulae in mathematics and science
- equivalent expressions (for example, a + b = b + a)
- generalisations of number patterns
- number puzzles (for example, what 2 numbers can add up to)

Vocabulary:

formula(e), number sequence, algebra(ic)(ally), equation, unknown, combination, variable