Maths Statement: Intent, Implementation and Impact Template: Part 2

KS1 (Implementation and Impact):

In KS1 our main priority is to ensure children are developing an appropriate, deep understanding and fluency of **place value and the four operations.**

We focus on:

- Using the CPA approach (Concrete, Pictorial and Abstract) as a way to introduce children to a range of representations.   Each year group / class has a toolkit of concrete resources.

- Practice to aid fluency at this early stage.

- Early Addition and Subtraction strategies which include:

    (i)   Addition and Subtraction facts to 10
    (ii)   Recording when appropriate, using the word 'and' progressing to = .
    (iii)   Including putting the 'answer' at the front e.g. 10 = 4 + 6 and including missing numbers 4+ _ = 10
    (iv)   Exploring commutative 4 + 6 = 6 + 4
    (v)   Exploring balanced sides e.g. 4 + 6 = 3 + 7
    Progressing to:
    (vi)   Subtraction and addition facts to 20
    (vii)   Recording of balanced sides e.g. 8 + 5 = 10 + 3
    (viii) Including missing numbers e.g. 8 + _ = 10 + 4; 9 + _ = 10 + _
    (ix)   Structured progression to addition of larger numbers:
            e.g. How does making 10 help to solve
            - 2 digit and 1 digit (with a 1 in the tens column, bridging ten) e.g. 14 + 7 = 10 + 10 +1
            - 2 digit and 2 digit (with a 1 in both the ten columns) e.g. 14 + 17 = 20 + 10 + 1
            - 2 digit and 2 digit e.g. 27 + 18 = 30 + 10 + 5

- Partitioning in different ways.
- Early multiplication and division strategies which include:
    (i) Repeated addition
    (ii) Counting in multiples
    (iii) Arrays
    (iv) Progressing from division as sharing to grouping. (Division as sharing becomes an inefficient strategy as soon as numbers become larger. Division as grouping also enables the connection to be made between x and ÷.)

(See detailed progression in our Calculation policies.)

In addition, we aim for children to:

- Develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary.

- Use a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

We develop visualisation by:

- Using equipment
- Seeing equipment but not using it
- Visualising using a jotting

- Introducing such methods as bar modellng to visualise mathematical concepts and solve problems.

We build in opportunities for verbalisation of thinking in younger years leading to written explanations of thinking / reasoning by Year 5/6. Children encouraged to answer in 'full sentence answers' by the use of sentence stems.

KS1 Impact

By the end of KS1 we expect the vast majority of our children to have developed confidence and mental fluency with whole numbers, counting and place value including working with numerals, words and the four operations.

Lower KS2 (Implementation and Impact)

In Lower KS2 our main priority is to ensure children **are becoming increasingly fluent with the four operations (including efficient methods), number facts and place value (including simple fractions and decimals) and are able to problem solve.**

We focus on:

- Continuing to use the CPA approach (Concrete, Pictorial and Abstract) as a way to develop children's conceptual understanding.

- Encouraging the most efficient strategies for calculation. Children are taught a range of strategies; they are taught to look at the calculation as a whole to encourage thinking about what the numbers mean rather than just the digits and using one strategy.

- Progressing understanding of multiplication by looking for linked / connected calculations:

- Progressing understanding of division by e.g.:

  (i) By halving to make the calculation easier:

  (ii) By dividing the dividend and the divisor by any number to make the calculation easier

  (iii) Divide by partitioning in different ways.

(See detailed progression in our Calculation policies.)

In addition, we aim for children to:

- Draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them.

- Use measuring instruments with accuracy and make connections between measure and number.

LKS2 Impact

By the end of Year 4 we expect the vast majority of our children to have:

- **Become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value.**

- **Developed efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.**

- **Developed their ability to solve a range of problems, including with simple fractions and decimal place value.**

- **Memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.**

Upper Key Stage 2 (Implementation and Impact)

In Upper KS2 our main priority is to ensure that children are:

- Extending their understanding of the **number system and place value** to include larger integers.

- Developing connections between multiplication and division with **fractions, decimals, percentages and ratio.**

- Developing their ability to **solve a wider range of problems**, including **increasingly complex properties of numbers** and arithmetic, and problems demanding efficient written and mental methods of calculation.

- Introduced to the language of **algebra** as a means for solving a variety of problems.

Calculators are introduced near the end of KS2 to support pupils' conceptual understanding and exploration of more complex number problems, if written and mental arithmetic are secure.

In addition, we aim for children to:

- to consolidate and extend their knowledge developed in number in geometry and measures.

- Classify shapes with increasingly complex geometric properties and learn the vocabulary they need to describe them.

UKS2 Impact

By the end of Year 6, we expect the vast majority of our children to:

- **Be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.**
- **Have deep conceptual understanding and the ability to recall and apply mathematical knowledge rapidly and accurately.**
- **Reason mathematically by following a line of enquiry, using their knowledge of relationships and generalisations, and justify using mathematical language**
- **Solve problems by applying their mathematics to a variety of problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.**