

St Ippolyts CE (Aided) Primary School

"Love one another. As I have loved you, so you must love one another"

John 13:34



Mathematics Policy

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1. Intent

The national curriculum for mathematics (2014) aims to ensure that all pupils:

- *Become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately*
- *Reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language*
- *Can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions*

In order to achieve these aims at St. Ippolyts School, we endeavour to ensure that children develop a positive and enthusiastic attitude towards mathematics that will stay with them throughout their education. This is encouraged amongst all our children, and teachers aim to foster confidence and achievement in a skill that is essential to our everyday lives.

At St Ippolyts School, we follow the Herts for Learning (HfL) ESSENTIALMaths programme of study, which gives us the basis of our mathematics curriculum. Through this spiral curriculum, where there is a clear focus on concrete, pictorial and abstract learning, we aim for all children to have a secure understanding across all areas of mathematics by the time they leave us in Year 6.

The expectation is that most pupils will move through this programme of study at broadly the same pace. Children who grasp concepts quickly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practise, before moving on.

2. Implementation

2.1 Planning

At St Ippolyts, teachers plan engaging, motivating and challenging lessons. Teachers deliver one curriculum for all, providing opportunities to stay together and to work through new content as a whole group. Teachers teach the whole class, allow pupils time to practise and bring the class back together to move on. Differentiated learning is provided through a selection of tasks to consolidate fluency, use skills to solve problems or use skills and reasoning skills to solve higher-level challenge problems. Teachers should use their professional judgement to determine the activities, timing, and organisation in each lesson in order to suit the teaching objectives and ensure children understand each small step of learning. In line with HfL ESSENTIALMaths, teachers ensure lessons centre around the concrete, pictorial and abstract approaches (see glossary). Teachers also use the 'Progression of Skills in Mathematics' document to ensure learning planned is age appropriate and builds on previous learning. Information on the appropriate methods and

calculations. By age group, are available for staff and parents in The Calculation Policy (see appendix 1).

2.2 Mental Mathematics

At St. Ippolyts, we recognise the importance of mental strategies and known facts that form the basis of all calculations. A range of mental strategies are developed throughout the Hfl ESSENTIALmaths programme and teachers regularly use these in their everyday teaching. Mental fluency through playful encounters are key when introducing a new concepts and can often be seen as starter or plenary is most mathematics lessons. By the end of KS2 we aim for children to be fluent in the fundamentals of mathematics with a conceptual understanding and the ability to recall and apply knowledge rapidly and accurately. Our daily fluency sessions are an extra to our maths lessons and focus on securing skills so they can move from the working memory to the long term memory.

2.3 Early Years Foundation Stage

In the EYFS at St Ippolyts School, early maths skills are taught through the two strands of Communication and Language and Mathematics taken from the document, 'Development Matters" (2020). Throughout their first year with us, children are provided with plenty of opportunities to develop the prerequisite skills, ready to work within the National Curriculum in Year one. Progression is measured throughout the year and all children are assessed against the ELGs at the end of Reception.

2.4 Vocabulary in Mathematics

Throughout all mathematics lessons, teachers and support staff regularly model accurate mathematical language. By doing so, children are able to develop a comprehensive understanding of how their skills can be applied to a multitude of problems. Our 'Progression of Skills in Mathematics' document supports teachers with their planning and outlines key vocabulary necessary for each year group.

2.5 Resources

All classrooms have an area within them dedicated to mathematics resources. We believe that having these easily accessible is imperative to the teaching of mathematics. Regular interaction with concrete resources enables children to become confident and familiar when using them in lessons and empowers children to make their own decisions when working independently. Furthermore, access to a variety of resources supports our 'Building Learning Powers' strategy seen across the curriculum.

All classrooms across both Key Stage 1 and 2 should have the following resources readily available. Concrete resources should be used and encouraged throughout both Key Stages.

- Counters
- Number Lines

- Bead Strings
- Numicon
- Interlocking Cubes
- Tens Frames
- Dienes
- Dice
- Number Cards/Playing Cards
- Dominos
- Number Squares
- Multiplication Grids

Resources linked with learning about weights, capacity, time, money, 2D and 3D shapes, which are not used or required regularly are stored centrally in the main corridor in labelled cupboards.

2.6 Adaptation

This should be incorporated into mathematics lessons where appropriate and can be done in various ways:

- Stepped Activities - which become more difficult and demanding but cater for the less confident in the early sections.
- Common Tasks - which are open ended activities/investigations where differentiation is by outcome.
- Resourcing - which provides a variety of resources depending on abilities e.g. counters, cubes, 100 squares, number lines, mirrors. Each classroom has a designated area where children are encouraged to collect any resources they feel might help them at anytime.
- Grouping- according to ability so that the groups can be given different tasks when appropriate. Activities are based on the same theme and usually at no more than three levels.

Some children may require more significant adjustments e.g. for those who are on the SEND Register. Teachers are able to plan for these with support from the Inco if required.

3. Impact

By the end of each academic year at St Ippolyts, children should be able to (appropriate to their year group):

- Have a secure knowledge of number facts and a good understanding of the four operations.
- Able to use this knowledge and understanding to carry out calculations mentally and to apply general strategies when using one-digit and two-digit numbers and particular strategies involving bigger numbers.
- Make use of diagrams and informal jottings to help record steps and part answers when using mental methods that generate more information than can be kept in their heads.
- Have an efficient, reliable, formal written method of calculation for each operation that children can apply with confidence when undertaking calculations that they cannot carry out mentally.

- Perform mental calculations including with mixed operations and large numbers.
- Develop a deeper understanding of numbers and adopt a mastery approach.
- Master maths by obtaining a deep, long-term, secure, and adaptable understanding of maths.

Furthermore, children will have the resilience to solve problems by applying their mathematics to a variety of situations with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios. They will be able to reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language. Children will also be able to apply various calculation strategies to work out arithmetic style questions.

Children are encouraged to share their misconceptions and misunderstandings and become skilled in using appropriate vocabulary in doing so. The inclusion of open dialogue to discuss and explain mathematical thinking also strengthens the use and understanding of mathematical language to ensure children can explain, and evidence their thinking.

We believe connecting maths across the curriculum highlights how maths relates to life. We regularly use and highlight this across our curriculum. Examples of this can regularly be seen in science investigations, for example, by collecting, recording and presenting data, taking measurements and collecting and categorising things from the world around us but also in other curriculum areas, such as Geography, Music, and PE.

4. Assessment

4.1 National Assessment

The main purpose of statutory assessment is to ascertain what pupils have achieved in relation to the attainment targets outlined in the national curriculum (2014) in mathematics.

Key Stage 1

The Standard Assessment Test (SATs) for maths consists of two papers:

Paper 1 - Arithmetic

Paper 2 - Fluency, reasoning and problem-solving.

For the second paper, there are a variety of question types, such as matching, multiple choice, true/false, charts and tables, and 'show your workings'. The results of these tests, taken before the summer holidays, are an indicator, to both teachers and parents, of which areas each child excels in and which areas they require further support in.

Year 4 Multiplication Check

According to the Department of Education, the purpose of the Multiplication Tables Check (MTC) is to determine whether pupils can recall their times tables fluently, which is essential for future success in mathematics. It will help schools to identify pupils who have not yet mastered their times tables, so that additional support can be provided.

It is an on-screen check consisting of 25 times table questions. Children will be able to answer 3 practice questions before taking the actual check. They will then have 6 seconds to answer each question. On average, the check should take no longer than 5 minutes to complete.

In order to support this national assessment, children from Year 2 will have a 'Times Tables Rock Stars' account. This is an online game that is carefully sequenced to provide appropriate age related times tables practice. The format is similar to the MTC. Each child has their own account and will be able to access this regularly at school. There is an expectation that children should also access this regularly at home.

Key Stage 2

The Standard Assessment Test (SATs) for maths consists of three papers:

Paper 1 - Arithmetic

Paper 2 - Fluency, reasoning and problem-solving.

Paper 3 - Fluency, reasoning and problem-solving.

Key Stage 2 SATs are predominantly used as a way for both parents and teachers to learn more about their child's academic strengths and weaknesses. They give teachers the chance to see how children are doing in comparison to their peers not only within the same school, but also nationally.

4.2 Summative Assessment

Teachers use summative assessments as a benchmark to see if children are on track with their learning. At St. Ippolyts, children complete these summative assessments at three points during the academic year. For mathematics, there are two papers to complete.

Paper 1 – Arithmetic

Paper 2 – Reasoning

The results of these, along with teacher judgement help inform future planning of lessons, interventions and areas that need to be supported.

4.3 Formative Assessment and Assessment for Learning

Teachers at St Ippolyts are continuously using assessment for learning strategies in their lessons as these help gather evidence to know if a child has understood the key learning. Questioning is a key strategy used in mathematics and teachers often ask children to explain, reason and justify their answers. In line with Hfl ESSENTIALMaths, 'Destination Questions' are also frequently used to ascertain how secure the learning before, during and after each learning step.

5. Monitoring and Evaluating

Currently, the Mathematics Subject Leader is a Maths Specialist Teacher. They are regularly released from their classroom in order to work with other teachers. This time is used to monitor and evaluate the quality and impact of mathematics throughout the school and enables the

coordinator to support teachers in their own classrooms. Throughout the academic year, the Subject Leader regularly monitors the subject through learning walks, book looks, and planning scrutinises. Staff meetings are also scheduled regularly to allow opportunities for teachers to work together and share best practise, ensure coverage, and moderate the standards of mathematics teaching and learning across the school.