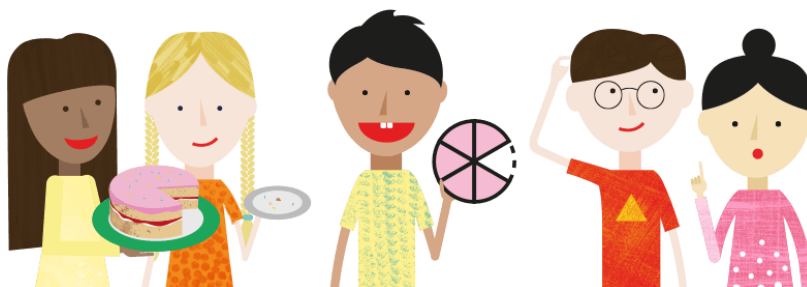


Maths at St Botolph's C of E Primary School

Policy



At St Botolph's we want to develop curious mathematicians who can spot patterns, make connections, whilst also be able to express their justifications. Therefore, we aim to equip all pupils with the skills and confidence to solve a range of problems through fluency with numbers and mathematical reasoning. The three aims of the National Curriculum (fluency, reasoning and problem solving) are addressed during every mathematics lesson.

We promote a growth mindset and believe that all children can get better at maths when they put in the effort and work at it. Our teaching focuses on depth of understanding and we ensure that learning always builds on prior knowledge. We believe that our approach to teaching maths will enhance understanding, enjoyment and achievement for every child.

Since September 2016, we have used the Maths No Problem Scheme to support our delivery of the National Curriculum objectives. We wholeheartedly believe that this method will provide a consistent approach to teaching maths across our school as it is underpinned by a methodical curriculum design that spirals and builds upon prior learning. Crucially, ideas are revisited at higher levels as the curriculum spirals through the years.

This document sets out the approach to teaching maths at our school and how we support all children to make progress and achieve their potential.

Maths Planning

- **Whole class together** - we teach Maths to whole classes. In line with the expectations of the National Curriculum, we believe that all children, where possible, should be exposed to the same curriculum content at the same pace and therefore allowing them full access. We believe that this will help to develop both a deep understanding and secure fluency of key mathematical concepts.

At the planning stage, teachers consider the **scaffolding** that may be required for children struggling to grasp concepts in the lesson and **suitable challenge questions** for those who may grasp the concepts rapidly.

- **Longer but deeper** - topics are taught in units of work that focus on key concepts and allow for children to gain a deep understanding. Supported by Maths No Problem, lessons and resources are crafted carefully to foster deep conceptual and procedural knowledge. Decisions about when to progress are always be based on the security of pupils' understanding and their readiness to progress to the next stage. Therefore, where appropriate, teachers supplement Maths No Problem lessons with our own carefully crafted lessons to allow the children to learn the content more deeply.

Learning is focused on one key conceptual idea and the steps in learning are small in order to allow connections to be made. In turn, this will give an opportunity for every child to master a concept and allow some children to be challenged deeper through applying their skills to greater depth tasks.

- **Key learning points** - these are identified by teachers during planning and ensure they are drawing attention to the key mathematical concept. The use of stem sentences aid children's ability to talk maths confidently and provide scaffolding for children who need support to explain their thinking.
- **Questions** - teacher questioning is key to ensuring that all children are challenged at an appropriate level and that children's understanding or misconceptions can be addressed immediately. Open questioning with probe pupil understanding through-out taking some children's learning deeper. We insist on children responding using the precise mathematical vocabulary. This is supported through their work with a

mastery partner where they are required to explain their mathematical thinking throughout the lesson.

Key Features of a Lesson

Following the Maths No Problem lesson structure across all year groups (including EYFS), we aim for children to receive a consistent approach to maths every day. Each lesson is divided into 3 distinct parts; an Explore, guided practice and independent work.

- **Explore** - an introductory activity for pupils that relates to the lesson objective. It may be a question or problem but it allows the children to think with their maths partner about methods they have previously been taught which they could apply to help them solve this task. They are encouraged to show their workings in a variety of ways and begin to consider the efficiency and appropriateness of methods.
After this, appropriate methods are modelled and reinforced by the teacher. Here misconceptions are often planned for, exposed and therefore addressed.
- **Guided practice** - gives the children time to consolidate what they have just learnt before moving on to the independent task. It also allows for immediate evaluation of the pupils learning and understanding. During this time, teachers will identify those pupils needing further assistance and then support appropriately.
- **Independent Workbook** - when ready, children work independently in workbooks. Tasks and activities are designed to be easy for pupils to enter while still containing challenging components. For advanced learners, the textbooks also contain non-routine questions for pupils to develop their higher-order thinking skills. At this point, some children may still need to work with the teacher or teaching assistant to consolidate their understanding.

Using Manipulatives

Carefully chosen practical resources and pictorial representations are used to explore concepts. We believe it is important that key concepts are introduced using a variety of concrete, pictorial and abstract representations. It is also crucial that throughout the lesson children will see all representations alongside one another to help expose the different underlying structure of mathematics. Rather than seeing the C-P-A approach as separate stages of learning we believe it is important that children go back and forth between them to help support their learning and deepen their understanding of a concept.

Equipment is available during all maths lessons (and at all stages of the lesson) and children are actively encouraged to utilise this. As they move further through the school, some children may independently pick their choice of equipment, however when learning new concepts this equipment may be selected by the teacher.

Questions to challenge thinking

Teachers use questioning throughout every lesson to check understanding – a variety of questions are used, but you will hear the same ones being repeated: How do you know? Can you prove it? Are you sure? Can you represent it another way? What's the value? What's the same/different about? Can you explain that? What does your partner think? Can you imagine?

Discussion and feedback

Depth of understanding is developed through pupils' being able to communicate using the correct mathematical language. We ask pupils to explain, justify and prove their ideas so that they are deepening their understanding of a concept. The use of a mastery partner is therefore crucial to our lesson design.

Jotters

Jotters are used across the school, where appropriate, to act as an aid for children to record their thinking. This may include, photos of work with concrete equipment, pictorial representations or abstract work. The children may also be required to write written responses to explain their thoughts and show their mathematical thinking. The

jotter will act as a useful point of reference for children to refer to as it is their way of recording their learning.

Rapid intervention

Those who are not sufficiently fluent with earlier material will consolidate their understanding, including through additional practice, before moving on. This may be through support during the guided practice of the lesson or out-side of the maths lesson. New learning is built upon previous understanding, so in order for learning to progress and to keep the class together, pupils need to be supported to keep up and areas of difficulty must be dealt with as and when they occur.

Supporting rapid graspers

Pupils who grasp concepts rapidly will be challenged through being offered rich and sophisticated problems before any acceleration through new content. Challenges will always link to the learning objective of that particular lesson and also allow for reasoning to take place. Teachers use a variety of resources to ensure appropriate challenges that link to the lesson objective, including NCETM Mastery materials, White Rose and MNP Teasers. These are often completed in their maths journals.

SEND pupils

Teachers are aware of the SEND pupils in their class and their specific Mathematical needs. Where appropriate, pupils may be supported through the use of additional adults and different resources. Pupil passport and EHCP targets will inform teachers decisions regarding appropriate support and intervention for these pupils.

For children with specific learning needs, their Maths learning will be in line with the guidance set out in their personalised EHCP.

Mental Fluency

'True' fluency can be best defined as 'children being able to confidently use and apply their knowledge of number relationship, number facts and our number system in order to calculate and solve problems.' In order for this to occur, we believe it is vital to provide our children with plenty of opportunities to use, apply and recall their number knowledge.

Mental strategies are the foundations for most of the areas of mathematics that use numbers, particularly formal written methods. Without efficient mental strategies, children can often struggle to quickly and fluently calculate.

Therefore, we have introduced daily mental fluency sessions to supplement our maths lessons. We firmly believe that improving the fluency of our pupils will allow them to become more efficient mathematicians; equipping them to confidently use their skills for reasoning and problem solving.

For pupils in KSI, we have utilised the Mastering Number programme. Through using this programme, our aim is for all children to develop automaticity in number facts and a deep conceptual understanding of number relationships (number sense.)

Teachers are supported with delivering this programme through the yearly overview and weekly lesson plans.

For pupils in KS2, our fluency sessions follow four distinct phases:

- Number of the day.
- Rapid Recall.
- Arithmetic.
- Application.

More information on our approach and the four distinct phases of our mental fluency sessions can be found in the 'A guide to mental fluency' document.

In some year groups Mastering Number is used to support the children gain great confidence and understanding with their number fluency.

Number Formation

Children take pride in the pride in the presentation of their work. The 'Number Formation Document' shows the way in which we encourage and teach children to form their numbers in order to ensure clear, legible and neat number formation.

In EYFS, number formation is taught through rhymes, teaching modelling and practice. The children will receive a consistent approach as the correct formations are reinforced and corrected (where necessary) as children move through the school.

Marking

Our current marking policy is that learning is ticked with green to show correct responses or a purple triangle is used to show where children need to correct their work. Other symbols are also used to show where children have needed support (S), been provided with intervention (I) or used equipment (E). A comment is made if/when a teacher feels this is necessary to move learning forward. Children are encouraged to respond to marking and will make any necessary amendments/corrections in blue pen.

In order to promote independence, children are, at times, encouraged to self-mark their own work. This will be indicated by the symbol SM and marked using the ticks and triangles in blue pen.

Maths in EYFS

The Mastering Number programme is used to support our delivery of Mastery Maths in EYFS.

- Mastery of mathematics in the Early Years will mostly be evident when the pupils initiate their mathematics both independently and successfully.
- They will use their maths consistently and without overt adult support when they are secure with a concept.
- Direct teaching could be with whole class or smaller groups and will be adult led and successful learning should be observed and assessed independent of this.
- The mastery approach to mathematics also embraces the Characteristics of Effective Learning as stated in Development Matters document.

- Children should apply their mathematics into a variety of contexts and play situations to make connections. Pupils should use an appropriate and relevant vocabulary and should be actively encouraged to discuss their maths and reason mathematically. Children should use well-chosen concrete, pictorial and iconic representations.
- They should recognise and be encouraged to use abstract symbols alongside less formal jottings and recordings.

Tracking Pupil Progress

We use end of chapter reviews and continuous opportunities for children to apply their skills so that teachers can assess for mastery. Teachers track pupils' gains in progress over the course of a topic, and identify gaps in knowledge that may need to be addressed.

The use of NFER/SATs Assessments are administered three times a year, in line with the whole school assessment calendar. The results of these are used to inform teacher judgements on attainment and progress whilst also highlight areas of strength and weaknesses.

Due to the nature of observations in EYFS, the children are continually monitored and assessed, with the adults able to provide ad hoc interventions to address misconceptions as they arrive. Children who are assessed as emerging in their age-appropriate development stage, are given bespoke interventions to insure they can achieve their targets, whilst still being exposed to the mathematical content being taught.

Data is also assessed by the Data Co-ordinator and Maths Leads in order to look at whole school trends and to identify target children. These children are tracked and monitored to ensure that they are accessing rapid interventions in order support their learning needs and continue to make progress.

Monitoring and review

The Maths Leaders, alongside the SLT, are responsible for having an overview of standards. This information can be gained in a number of ways - book sampling, pupil interviews, planning

scrutiny, monitoring displays and visiting lessons. Information gained is collated by the subject leaders and used to highlight areas of strength and weakness. Appropriate action is then taken depending upon the outcome.

We will continue to review this policy and the School Development Plan to ensure continual improvements in attainment and progress in Maths for all of our children.