



Faith, Family and Fascination

Maths Policy

Boutcher C.E. Primary School

Reviewed by: Ed Avis

Last reviewed during: Spring 2024

Next review due by: Spring 2026

“Love one another. As I have loved you, so you must love one another.”
John 13:34

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Mission Statement

The Maths Policy will support the delivery of the Mission Statement. Maths takes place within the context of the Christian aims and ethos of Boutcher School as reflected by our Mission Statement.

“The aims and practice of Boutcher School seek to reflect the life and teachings of Jesus Christ as told in the Gospels. Jesus taught us, through His example of unconditional love and compassion, that we are all of equal value to God. Everyone is entitled to be regarded with dignity, fairness and respect. We strive to ensure that our school enshrines the values which Jesus taught us.”

The children at Boutcher discussed our Mission Statement and created their own interpretation of it.

“In our school everyone has the right to learn, the right to feel safe and the right to respect. They have the right to learn the good news of the Gospels and to know that God loves us all equally (whether we are rich or poor, young or old.)

We strive to live in the way that Jesus would want us to. We tell others Jesus's stories so that they can learn from them too and we try to set an example for other people in the way that we act. In all that we do we help each other and love others as Jesus would want us to.

Boutcher CE Primary School tries its best to remember that Jesus loves us, even when we make mistakes.”

SMSC Statement

Through the teaching of Maths, children’s SMSC is promoted and supported. We aim to prepare our children to maximise opportunities, develop their responsibility and enhance their experiences now and in the future.

Through lessons we promote our Boutcher values of Faith, Family and Fascination. We enable every child to develop and flourish in a loving and open environment in lessons. We actively promote the fundamental British Values as stated by the Government and design opportunities in the curriculum to do this. We want Maths to be an enjoyable subject where children are fascinated by the learning of themselves, others and the world around them. At the heart of our school, is a rich and diverse culture and community that we enjoy and celebrate. We seek opportunities to work with the local community, explore our local area, welcome visitors to the school, go on trips and take part in community events and projects.

For further information, see the SMSC Policy.

Equal Opportunities and Inclusion

In Maths, we are committed to promoting and providing all children with high expectations and an equal entitlement and opportunities regardless of race, gender, culture, class, SEN or disability. We aim to meet the needs of all our children by personalising our Maths curriculum, promoting inclusivity to fully engage and motivate all children. This involves providing opportunities for SEND children to receive support and/or scaffolding as well as challenging all children to take an active part in their learning and to achieve their potential.

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Aims and Objectives

National Curriculum Aims

'Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.' (DfE 2013)

Boutcher Aims

Mathematics pervades many aspects of our lives and can help us to make sense of the world. With this in mind, this policy promotes the basic and wider understanding of mathematics, and hopes to instil an enjoyment in the subject by supporting children to engage with it and helping them to be successful at it to promote further learning. We encourage a teaching practice that will result in children making *sustained* progress. To that end we have ensured that we have adopted an evidence-informed approach to what works when teaching mathematics. The policy attempts to provide an ambitious yet practically achievable framework for the teaching mathematics.

Organisation, Planning and Delivery

Maths, No Problem!

The school has committed to following *Maths, No Problem!* - a Department for Education recommended teaching scheme that supports the *mastery* approach to teaching mathematics. However, it remains that the judgement of teachers may determine that the order or structure prescribed by *Maths, No Problem!* is not followed strictly. We place trust in teachers' professional judgement to amend or add planning, resourcing, interventions or assessments accordingly. The advantage of implementing this immediately across the school is that all teachers will become familiar with the scheme and training given will be relevant to all.

EYFS: Foundation Stage: Reception

In Reception, the priority is for children to develop a deep and secure understanding of the foundations of mathematics - an understanding that is grounded in the concrete, practical and pictorial. Through providing children with mathematical activities that encourage children to recognise the nature of number and its many different representations, we hope to nurture an interest in the subject and help them to see that it is a helpful lens through which to understand and interpret the world.

While there may be opportunities for children to learn about mathematics through interaction with their peers and discovery, there remains the expectation that the teacher will *teach* children the early learning goals in such a way that *all* children are given the opportunity to develop their sense of number deeply. This is of great importance, as it will make consequent mathematical concepts more accessible.

Maths — No Problem! Foundations is designed with all the theory and rigour that underpins a true mastery approach. It also meets all the requirements of the national curriculum's Early Years Foundation Stage and the revised EYFS Framework 2021. It encourages learning through play and

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begins to develop a deep understanding of the world of mathematics. *Foundations* includes Workbook Journals, Picture Books, and online Teacher Guides with printable resource sheets. The approach is designed for children to learn core principles through structured learning activities and play, with games being designed with a deep mastery focus.

This is the first year using this scheme and our Reception teacher may well see the need to adapt and supplement the materials, drawing on previously used effective resources from NCETM and *Number Blocks*

In Reception children will become familiar with using concrete resources that act as useful models for thinking about number and different representations. Children manipulating number in different representations serves to deepen their understanding of number and begin to build mental models for thinking about number.

Key Stage 1 and Key Stage 2

Problem solving, fluency and relational understanding are at the heart of the scheme. It uses the Concrete Pictorial Abstract (CPA) approach and allows pupils to spend enough time to fully explore a topic in terms of representation and structure, reinforcing it with practice, before moving onto the next one. All ideas are built on previous knowledge and pupils have ample opportunity to develop relationships between topics.

Lessons typically are broken into four parts:

1. Explore Task – the entire class spends time on a question guided by the teacher. The children are encouraged during this time to think of as many ways as possible to solve the question as possible.
2. New Learning – the teacher introduces and explains the new learning for the lesson, providing precise explanation.
3. Guided Practice – children practice new learning as a class, in groups, pairs or individually guided by the teacher.
4. Independent Practice – individual practice. Once children have mastered the concept they use their reasoning and problem-solving skills to develop their depth of learning.

Key points:

- a highly effective approach to teaching maths based on research and evidence - the small manageable steps used to explain new concepts avoids overloading children's short-term memory
- builds students' mathematical fluency without the need for rote learning
- introduces new concepts using Bruner's Concrete Pictorial Abstract (CPA) approach
- children learn to think mathematically as opposed to reciting formulas they don't understand
- teaches mental strategies to solve problems such as drawing a bar model
- lessons are designed to enable children to practise and apply new knowledge within other areas of the mathematical curriculum.

To ensure a high standard of teaching and learning in all classes, we need consistent and effective pedagogical practice within and between year groups. Effective teaching within maths requires the

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development of strong subject knowledge, high expectations, effective use of assessment and feedback, and regular opportunities to retrieve and consolidate.

Developing Subject knowledge for Direct Instruction

The *MNP!* scheme provides Teacher Guides that explain the rationale behind the approach to teaching each discrete piece of knowledge within each lesson.

Explanations are broken into small steps and carefully planned so it is necessary that teachers fully understand and learn these before teaching them. Understanding and believing in the reasons behind the teaching is vital to its success. It allows the teaching to remain and concise and engaging. It enables strong and consistent direct instruction in the classroom, with teachers able to deliver content with clarity, confidence and precision. Teacher Guides draw attention to the importance of the CPA approach that must be adopted by all so children can experience the diversity of mathematical representation and structure.

Each class teacher is responsible for being prepared for lessons in mathematics for their class. While they should largely follow the scheme mentioned outlined above, trust is placed in teachers' professional judgement to deviate from it when they deem it appropriate.

High Expectations

Teachers should have high expectations of all children's learning and provide appropriate support so that they can achieve. We explicitly teach precise vocabulary and expect pupils to use these when articulating their mathematical reasoning.

We expect all children to engage with the learning. Questioning must be used to maximise children's participation: teachers may employ a no hands-up approach and provide opportunities for all to share answers on whiteboards.

Children are expected to make the most of the opportunities to practise in each lesson and understand that it is needed if they are to experience success.

Teachers should recognise when children have not adequately grasped a learning point. Scanning over pupils' independent work from *MNP!* and 5-a-days regularly is expected as a means of assessing this. In response, teachers plan interventions for further explanation and practice to prevent that child falling behind. These interventions may be delivered by the teacher or class teaching assistant.

Retrieval and consolidation

The mastery approach involves children studying mathematical topics in depth one at a time. Wherever possible *MNP* expects the application of past learning within each new topic.

To ensure all areas are revisited, children also complete daily low stakes quizzes. These '5-a-days' provide an opportunity for regular spaced retrieval practice, which research findings indicate aid long-term retention of knowledge, and another daily opportunity to interact and assess where children are with their learning, indicating either understanding or the need for some sort of intervention. That intervention may be immediate and one-to-one or take the form of responsive whole-class feedback. Performance at a given task in one lesson does not provide a good indication of future performance, so regular quizzing can provide a more accurate picture of where a child might be. Through revisiting tasks children have a better chance of being able to retrieve knowledge in the future

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Teacher may also incorporate retrieval practice into other times in lessons where it is helpful, taking the form of questioning with all pupils responding on whiteboards.

The content of these 5-a-days should include questions from a range of areas they have previously been taught. They may also involve revisiting knowledge that must be fluent and automatic to the learner, so all questions may ask learners to recall certain number facts or procedures. This is especially important when we acknowledge the suggested findings of Cognitive Load Theory. The more mathematical knowledge children have committed to their long-term memory, the more of their working memory can be freed up to understand new material, solve problems or engage with investigations. Being fluent in the different *procedures* of maths and *counting* decreases the strain on a child's short-term memory.

Resources

Throughout the school we have a variety of resources in designated areas around school. Resources are added to regularly. Each classroom will be resourced with materials to support the delivery of maths: such items might include tens frames, number tracks, number lines, multiplication tables, 100 squares, 2D and 3D shapes, unifix cubes, multilink cubes, dice, dominoes and other smaller items. Larger materials such as scales, trundle wheels and measuring cylinders will be held centrally in the cupboard in the hall. Resource shortages should be notified to the coordinator who has responsibility for ordering equipment as required.

Marking and Feedback

Formative Assessment

Lessons must be responsive to the needs of the children: sped up or slowed down or levels of support adjusted following in-lesson assessment.

Effective questioning provides quick indicators of understanding and immediate opportunity to provide instructive feedback.

Work completed within the lesson is assessed promptly and feedback given as close as possible to the time of the work being completed. This live feedback within a lesson may be verbal or written. Within lessons children should be receiving as much feedback as is practical and possible, both individual and whole-class. Immediate feedback allows children to assess their own understanding and learn from mistakes there and then. There should be regular opportunities for discussion of answers and strategies to support pupils' reasoning skills and check and deepen their understanding.

Interaction and dialogue should focus on key ideas and concepts (including misconceptions and difficult points) and effective, efficient strategies of working mathematically. The NCETM advises that *'the most important activity for teachers is the teaching itself, supported by the design and preparation of lessons. Marking and evidence-recording strategies should be efficient, so that they do not steal time that would be better spent on lesson design and preparation. Neither should they result in an excessive workload for teachers.'*

Teachers should aim to distinguish between a child's simple slip and an error that reflects a lack of understanding.

- For slips, it is often enough to simply indicate where each slip occurs, particularly when the teacher's/school's approach is to encourage pupils to correct them;

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- If errors demonstrate lack of understanding, the teacher may decide to take alternative courses of action, for instance, with a small number of pupils, the teacher may arrange an intervention, while for a large number of pupils, the errors will be addressed in the next lesson.

Evidence demonstrates (Black and Wiliam 1998) that many children benefit from marking their own work. Part of this responsibility is to identify for themselves the facts, strategies and concepts they know well and those who they find harder and need to continue to work on. Children will tick or make corrections.

Marking is key to producing independent learners in Maths and helps to raise attainment by celebrating the successful aspects of a child's work and also reminding them of the next step. Feedback and marking in Maths aims to challenge the children, make them question and to give them the skills needed to refine or correct their work. For further details on marking and feedback in Maths lessons please see our Marking and Feedback Policy.

Progress and Assessment

Summative Assessment

At the end of each term children sit an assessment. In the autumn term, these are *PUMA* assessments. In spring and summer, children sit *Maths, No Problem!* Assessments. All of these provide useful data to identify areas of strengths and weakness individually and as a class. Along with the knowledge of children's understanding gained from lessons, teachers should use performances in lessons and 5-a-days to reach a judgement to determine whether each child is working *below, towards, at* or *above* year group expectations at the end of each term. This is recorded in line with school assessment procedures. The progress, attitude and attainment of each child is shared with parents on a termly basis.

Observations and Modelled Lessons

The Maths Coordinator observes maths lessons from time to time. Observations might be of a full lesson or through a learning walk. Observations will be to assess the teaching of Maths in line with this policy and should be viewed as supportive and for development purposes. Sometimes the quality of teaching and formative assessment will be monitored through 'book looks', the outcomes of which will be shared with individual teachers and SLT. The Maths coordinator may model the teaching of Maths for colleagues, particularly for new teachers, when requested by teachers or where there is a training need.

Monitoring by the Governors

The governors take part in learning walks with a maths focus on a rotational basis. They visit each class and observe maths learning across the school. The coordinator will meet with the governing body to discuss these observations and go through the standard and teaching of maths across the school.

Cross-curricular Skills and Links

Maths is associated with so many aspects of our lives and we aim to relate it to all areas of the curriculum when a beneficial link can be made. Cross-curricular links are encouraged and where possible, children will have the opportunity to see how maths underpins so many subjects and areas of life - whether that's coordinates in geography, shape in art or data collection and analysis in scientific investigations.

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Examples of cross-curricular learning links can be seen on Year Group Curriculum Overviews.

Role and Responsibility of Coordinator

The Maths coordinator is actively involved in aiming to raise the standards of teaching in the subject. They run planning meetings, staff INSET where required and distribute new ideas and resources among the teaching staff.

The coordinator should keep colleagues aware of recent research and relevant developments in literature through staff meetings where possible. The coordinator monitors the standard of work across the school through book looks, meetings with the governors after learning walks and observations.

Homework

Numbots

Starting in Reception, children will have access to *Numbots* – an engaging online platform that motivates children to improve their knowledge of addition and subtraction facts. Children are encouraged to complete each level with 3 stars to ensure they have mastered the new knowledge to a point of near automaticity.

Times Tables Rock Stars

The national expectations are that the following relevant times tables and division facts should be known:

Y2: 2s, 5s, 10s

Y3: 2s, 5s, 10s, 3s, 4s, 8s

Y4: 2s, 5s, 10s, 3s, 4s, 8s, 6s, 7s, 9s, 11s, 12s

Since these are now tested at the end of Year 4, it is important that teachers aim to incorporate the learning of times tables in school - and as far as possible to encourage parental support at home to ensure these facts are learnt. Pupils should regularly use *Times Tables Rock Stars* at home to further improve their knowledge. Knowing times tables facts is of considerable benefit to pupils; when known these facts can make so many aspects of easier to understand.

Plan for Unforeseen School Closure

Should there be an entire school closure we will continue to teach children in accordance with the Maths curriculum overview. We will continue to plan a variety of activities and provide children with opportunities to continue with their learning at home with lessons being tailored and adapted to suit home learning.

We will use online platforms to teach and deliver homework. Please see the Remote Learning Policy for more information.

Promoting Diversity in Maths

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At Boutcher, we have always been committed to providing all children with an equal entitlement to activities and opportunities regardless of race, gender, culture or class.

We want all children to feel they are positively represented and have opportunities to find out and explore the lives of significant individuals that have made an impact in the world we live in. For BAME children, this may be learning about prominent figures and their influence from people from a range of countries and places. We want children to see themselves as the future and be equipped with the necessary skills and knowledge from the wider world. If children have the self-belief and determination, they will achieve greatness.

In terms of Maths, we want all children to feel valued and positively represented.

In Maths lessons children are regularly reminded that we respect all people, beliefs and cultures and that disrespect and derogatory views are not tolerated. If children share views that cause concern, these should be written on the appropriate forms and handed to the Headteacher. If teacher's feel uncomfortable in discussions or when planning lessons, they should speak to the Maths coordinator for support.