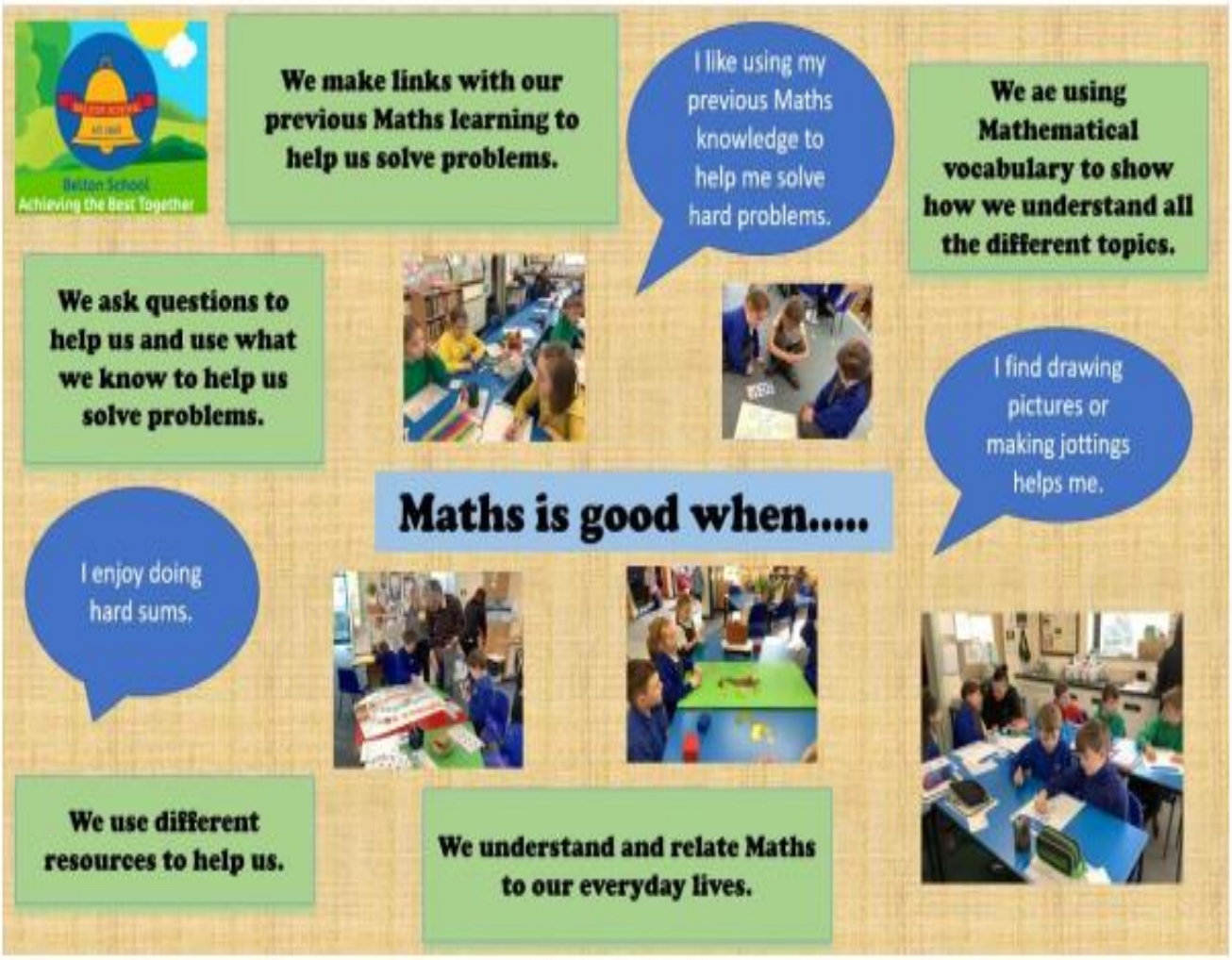


Belton C of E Primary School

Mathematics Policy

Updated – April 2025

Introduction

'Mathematics is a creative and highly interconnected 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 mathematical education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the power and beauty of mathematics, and a sense of enjoyment and curiosity about the subject.' (DfE 2013)

As can be seen from the above introduction, mathematics pervades all aspects of our lives and helps us to make sense of our 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 build upon their own understanding and promote further learning.

Learning skills are an important aspect of mathematics but such skills are only a means to an end, and should be taught and learned in a context that provides purpose and meaning.

This policy should be read in conjunction with the following school policies:

- Calculation Policy/ Progression in Calculation
- EYFS Policy for Mathematics
- Assessment Policy
- Marking & Feedback Policy
- SEND Policy

Maths Vision Statement

The language of mathematics is international. The basic skills of Mathematics is essential to everyday life, critical to science, technology and engineering; necessary for financial literacy and most forms of employment. Our aim is for all children to think mathematically enabling them to reason, solve problems and assess risk in a range of contexts: developing a sense of enjoyment and curiosity about the subject.
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.
At Belton C of E Primary School, our mastery curriculum has been developed to ensure children can achieve excellence in Mathematics. Our philosophy is to empower our pupils to say 'We are Mathematicians' and 'As Mathematicians we...' Children can experience a sense of awe and wonder as they solve problems for the first time, discover different solutions and make links between the different areas of Mathematics. It provides the pupils with a deep understanding of the subject through a concrete, pictorial and abstract approach. This ensures pupils fully understand what they are learning.

The National Curriculum for Mathematics 2014 aims to ensure that all pupils:-

- Become fluent in the fundamentals of Mathematics
- Are able to reason mathematically
- Can solve problems by applying their Mathematics

Aims of Mathematics at our school

At Belton C of E Primary School, we aim to develop motivated, creative and resilient mathematicians who can confidently apply what they learn. We do this by:

- Using our learning powers to aid us with our learning. Charlie the cheetah helps children to jot down ideas, Danny the Dog helps children to not give up and Curious George helps children to make connections to deepen their understanding.
- developing and nurture a **'growth mindset',** based on the belief that everyone can do mathematics.
- teaching new skills and encouraging the children to practise – intelligent practice
- avoiding children just memorising a single procedure - they need to know why they are doing what they are doing and know when it is appropriate to use different methods
- developing procedural fluency and conceptual understanding in tandem because each supports the development of the other.
- using concrete, pictorial and abstract activities in turn to support understanding
- building on previous concepts through carefully structured and progressive learning units
- teaching children to reason and, therefore, explain/deepen their understanding
- revisiting and consolidating areas of study, spending significant time developing deep knowledge of the key ideas that are needed to underpin future learning
- making connections at the optimum time
- emphasising the structure and connections within the mathematics, so that pupils develop deep learning that can be sustained
- providing the 'tools' needed to be a 'problem solver' both in maths and in other areas of the curriculum
- pitch lessons to challenge all to reach the highest standard
- promoting the relevance of maths in real life scenarios
- regularly and diagnostically assessing children's outcomes and measuring progress
- supporting our learners at home

As a result of this learning, our children will:

- learn number facts and times tables to automaticity to avoid cognitive overload in the working memory
- solve problems efficiently and think logically
- be **resilient** in their learning
- be **reflective** and able to discuss and evaluate their work with confidence
- reach the highest standard possible and to think for themselves within the subject

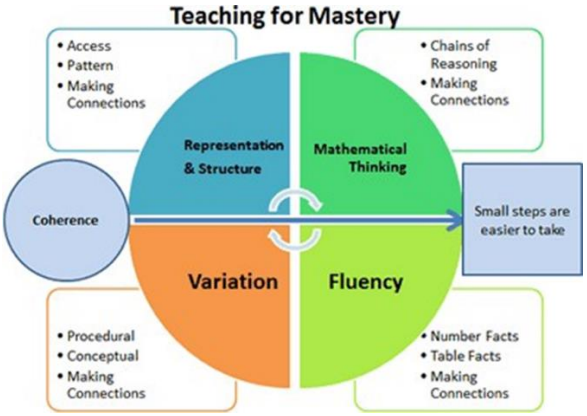
- be creative and imaginative, to appreciate the power and beauty of mathematics
- be confident to talk about their work
- be confident to work mentally
- be the best that they can be independently, choosing **resources** to help their understanding as they need them
- be prepared for applying their skills effectively in everyday life situations, in their future learning and in the work place

Our approach to the teaching of mathematics focuses upon high quality teaching of mathematics, to introduce, and then secure and embed key concepts. At Belton C of E Primary School, we teach for mastery.

Teaching for Mastery

At its core, a mastery approach rejects the idea that some children can't do maths. It recognises that by nurturing positive attitudes and building confidence in mathematics, all children can achieve.
Concepts are built in small, logical steps and are explored through clear mathematical structures and representations. Children are taught together in year groups and the focus is on depth - not acceleration - so that all children have a chance to embed learning. Teaching is supported by high-quality resources which present the flow of lessons coherently and provide opportunities for plenty of intelligent practice.

Our Mathematics curriculum is underpinned by the NCETM Five Big Ideas.
Effective teaching for mastery is underpinned by five big ideas, first published by the National Centre for Excellence (NCETM) in mathematics in 2017.
We have chosen to follow the White Rose scheme as it follows these five big ideas.



Coherence

Lessons are broken down into small connected steps that gradually unfold the concept, providing access for all children and leading to a generalisation of the concept and the ability to apply the concept to a range of contexts.

Representation and Structure

Representations used in lessons expose the mathematical structure being taught, the aim being that students can do the Maths without resources to the representation.

Mathematical Thinking

If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the student: thought about, reasoned with and discussed with others

Fluency

Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics

Variation

Variation is twofold. It is firstly about how the teacher represents the concept being taught, often in more than one way, to draw attention to critical aspects, and to develop deep and holistic understanding. It is also about the sequencing of the episodes, activities and exercises used within a lesson and follow up practice, paying attention to what is kept the same and what changes, to connect the mathematics and draw attention to mathematical relationships and structure.

Source: https://www.ncetm.org.uk/teaching-for-mastery/mastery-explained/five-big-ideas-in-teaching-for-mastery/

How Mathematics is taught

Maths is taught daily during the morning for all year groups from EYFS to Year 6 and all year groups follow White Rose mixed - aged planning to ensure consistency and progression across year groups.

A typical maths lesson lasts between 45 minute - 1 hour and begins with a short number fluency activity such as Flashback 4, Fluent in Five, Strawberry Jam/ Lemon Curd.

The small step for the lesson is then shared with the children and they revisit key concepts from previous learning that support the key learning of the lesson. Children then solve contextual problems as a class, with the teacher that expose the structure of the mathematical concept. In this part of the lesson, teachers use careful questions to draw out children's discussions and their reasoning and the children learn from misconceptions through whole class reasoning. To support this, the teacher will often use a stem sentence to scaffold children's articulation of mathematical ideas and reasoning, and/or a generalisation that supports application of the concept. The variation in this part of the lesson enables a deeper understanding

of the concept and may include the use of related concrete resources, as well as representations of the problem to provide a secure base of understanding. Teacher modelling is imperative and supports the children's understanding – we use the 'I do, You do, We do' model within our teaching.

The teacher will review responses and then share answers and strategies, addressing any misconceptions, before children continue with their practice. This practice uses conceptual and procedural variation to build fluency and develop greater understanding of underlying mathematical concepts. This 'intelligent practice' supports mathematical thinking and enables children to:

'Recognise and use connections among mathematical ideas; understand how mathematical ideas interconnect and build on one another to produce a coherent whole; recognise and apply mathematics in contexts outside of mathematics' (Annenberg Foundation, 2017)

Where appropriate and depending on the topic, children will continue to have access to concrete resources which they can use to complete the practice task. Some children might be supported through additional scaffolding provided by the teacher. This may include provided models of the calculation method that the children will need to use, or copies of the worded question, with key aspects and vocabulary highlighted.

Children who have mastered the lesson can start sooner or further on, on the worksheet if deemed appropriate. Children who complete the task are provided with further 'rich and sophisticated' problems from the White Rose Maths Small Steps,, NCETM mastery documents or our own questions based on True or False.

When it is deemed appropriate, children will undertake a mathematical problem related to the key learning or a PSR question which all children have a go at in their books or on whiteboards. Teachers will also model this with children on the board if deemed necessary. This is so that all children have the opportunity to undertake a PSR question within the lesson and build the resilience to undertake Maths problems independently.
At times teachers may use a 'True or False' question, which requires the children to use mathematical reasoning to prove or disprove a related statement. This supports us with seeing who has understood the lesson and may need further support.

Mixed Age

We have adopted the WR Mixed – Aged planning for our KS2 classes however due to the nature of the Maths curriculum and our COHORTS we currently separate the KS1 classes for Maths with them both using the White Rose version 3 resources or some of the Mixed- Age materials.

Organisation

The school has implemented a blocked curriculum approach to the teaching of Mathematics. This ensures that children are able to focus for longer on each specific area of Maths and develop a more secure understanding over time. This approach is also designed to enable children to progress to a greater depth of understanding.

Subsequent blocks continue to consolidate previous learning so that the children continually practise key skills and are able to recognise how different aspects of Maths are linked. For example, when children have completed a block which has enabled them to master the multiplication of two-digit numbers, a subsequent block on area and shape might provide opportunities to use this understanding when calculating the area of shapes with 2-digit length and width dimensions.

To ensure children are secure in areas of the curriculum that are important for their year group we have developed a non-negotiable plan which is taught every half term and reinforced in our daily starters weekly. (see Fluency section)

Where appropriate there will be a problem solving lesson which is taken from Nrich and links into the current learning where possible.

Fluency

Children will do a Flashback 4/ or in UKS2 Arithmagicians daily which ensures retrieval practise and keeps the Mathematics fresh. Assessment will be done at the end of every unit and uploaded to Insight – this ensures any gaps will be addressed in interventions.

In LKS2 daily times tables will be done to prepare children for the Year 4 multiplication test while this is continued in UKS2 through the use of TT Rockstars and weekly times tables challenges. In KS1 children have access to Numbots to ensure rapid recall of their number bonds.

Strawberry Jam, Lemon Curd and Chocolate Spread help children with their fluency by rapidly recalling number facts. UKS2 complete these each week, trying to beat the previous weeks score.

Assertive Mentoring

These provide regular coverage of the essential skills needed to ensure good pupil progress in maths across the whole school. Pupils take the Weekly Basic Skills Check once a week using a positive 'beat your own score' approach. It takes approximately 30 minutes to complete.

The same knowledge and skills are 'tested' every week, in the same order at the same level of difficulty making gradual weekly progress inevitable as they become embedded over time. These ensure that essential knowledge is embedded in the long term memory.

Work in books

EYFS

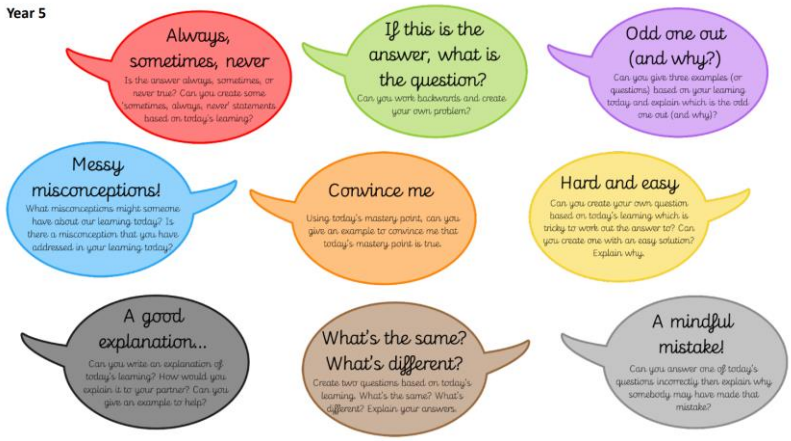
Pictures are taken of practical activities and photocopies of work done on whiteboards is added to the learning journey.

KS1/ KS2

We have decided to trial our own Mathematical booklets in KS1 and KS2. Children then work through the White Rose worksheets at their own pace. Mathematical jotters and reasoning books have recently been introduced in KS2 for children to show their workings or for early finishers to have a go at answering reasoning questions.

Dive Deeper Challenges

Dive deeper challenges will be clearly labelled in books. These will be taken from the problem solving and reasoning section of White Rose, NCETM Mastery booklets/ NCETM Reasoning questions or targeted now what questions such as:-



Children will be expected to explain their thinking when answering these questions.

Children who need extending will be extended in the following ways:-

- Flexible Thinking eg What goes on behind the answer?
- Choosing multiple methods eg Could you solve the question in another way?
- Spotting patterns and making connections eg Give them the answer – why does this happen? Does it always work?
- Thinking creatively & not being scared to try new things

Questions will be used to extend examples of these may include:-

- How do you know?

- What is?
- What can it not be? Why?
- How many ways can you find?
- Is that the only answer? How do you know?
- Convince me this is true.

Assessment

Assessment for Learning:

Children receive effective feedback through teacher assessment, both orally and through written feedback, and AfL is integral to the design of each lesson;

- The structure of the teaching sequence, ensures that children know how to be successful in their independent work. A daily fluency activity supports children's recall of key number facts, which frees working memory. Teachers will make informed choices as to when they should progress to new content according to the degree of fluency that children are able to demonstrate.
- The 'Get Ready' part of the lesson is when a new mathematical concept is introduced and the guided practice aspect of this part of the lessons means that children are well prepared to be able to apply the skills, knowledge and strategies taught they have learnt for the 'Your turn' task.
- Common misconceptions are identified and addressed within the teaching sequence and key understanding within each 'small step' is reviewed and checked by the teacher and the children before progression to further depth.
- Where deemed appropriate teachers may use a whole class 'True or False' statement. This is a way for teachers to use the children's responses as a means to assess the depth of their understanding.
- Where needed ALF is to show that they have spoken to a child within a lesson.
- Opportunities for additional practice and correction are provided by the teacher, as appropriate, during marking, with a focus on promoting and achieving a growth mindset approach in the subject. Children are expected to correct their work at the start of the next lesson.

Formative Assessment:

Short term assessment is a feature of each lesson. Observations and careful questioning enable teachers to adjust lessons and brief other adults in the class if necessary. The lesson structure of a White Rose Maths lesson is designed to support this process.

At the end of each blocked unit of work, the children also complete the carefully aligned White Rose Maths 'End of Unit Assessment'. The outcome of this is used by the teacher to ensure that any identified

gaps in understanding can be addressed before the next unit is taught. This also informs dialogue with parents and carers during parents evenings, as well as the judgements made at the end of the term as to the extent that each child has achieved the expectation for their year group. These assessments and teacher knowledge of the unit are then uploaded to our Insight system and are used to identify gaps and children who need further intervention.

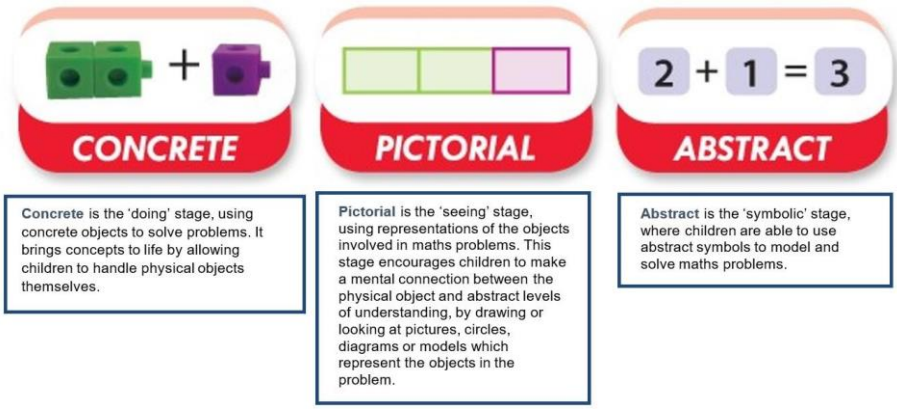
Summative Assessment:

Teachers administer a termly arithmetic paper and reasoning and problem-solving paper from NFER (In Year 1 this occurs later in the year) The results of these papers are used to identify children's ongoing target areas, which are communicated to the children, as well as to parents and carers at Parents Evening. They are also used alongside the end of unit assessments and outcomes of work, to inform the whole school tracking of attainment and progress of each child. In Year2 and 6, SATS papers are used. The results are uploaded to Inisght and are used to show gaps in order to support future learning.

Assessment data in Maths is reviewed throughout the year in pupil progress meetings and to inform interventions and to also ensure that provision remains well-informed to enable optimum progress and achievement. End of year data is used to measure the extent to which attainment gaps for individuals and identified groups of learners are being closed. This data is used to inform whole school and subject development priorities for the next school year.

Planning and Resources:

The use of manipulatives objects is an integral part of the White Rose Maths scheme which incorporates the concrete – pictorial – abstract pedagogy:



There is a central store of resources. As well as this each classroom has its own supply of mathematical equipment, in line with the White Rose Maths Progression in Calculation, which the school as adopted (this is also available on the school's website).

Teachers also have access to the White Rose Maths Interactive Teaching Resources for the purpose of modelling strategies and demonstrating the use of concrete resources. These are used where appropriate within the lesson.

The school subscribes to the White Rose Maths Premium Resource Centre. This provides access to visual resources (including lesson slides that teachers can adapt), as well as small steps planning guidance and reasoning and problem-solving questions that accompany each small step, to inform and use in lessons.

Teachers are encouraged to use the school playgrounds as an outdoor classroom when possible, for example, when teaching length, area or perimeter.

Oracy in Maths

Oracy involves teachers and their students thinking carefully and deliberately about the sorts of spoken language they are using, and this will vary across subjects and with different age groups. Our vocabulary is to support teachers and teaching assistants to use the correct vocabulary consistently across the different age groups.

Maths in EYFS (see policy on website for more detail)

We believe that "Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically.

In order for our children to have a solid foundation in their Mathematics learning. Maths in the EYFS Will follow the White Rose planning and focus on Number as well as Numerical Patterns. This will ensure progression in skills throughout KS1.

Lessons are practical and engaging with work photographed and any observations put into their learning journeys. Children have the opportunity to use manipulatives such as Numicon, counting bears, tens frames and part whole models. Links are made to outside learning and their environment with lots of opportunities to develop mathematical concepts through play.

KS1 and KS2

Through Years 1 to 6 we use a coherent programme of high-quality materials and exercises, which are structured with great care to build deep conceptual knowledge, alongside developing procedural fluency.

Our KS1 and KS2 teachers use White Rose Maths Premium lesson slides, which they adapt accordingly. Children record their work in their Maths books. They might also use their maths book to record key number facts and make representations of mathematical concepts.

Lessons in both key stages follow the same sequence (see section 2: Teaching and Learning). In all year groups, the teacher might use 'mini-plenaries' to explain each question during the children's completion of the practice book and also to check children's understanding before they complete the next question. This ensures that all children are able to complete the task with confidence.

The White Rose Maths progression document, available on the school website, provides an overview of how

the scheme covers the statutory requirements of the 2014 National Curriculum and Ready to Progress criteria. It also shows how concepts build over time and how the teaching blocks are sequenced in each year group.

Ready to Progress

The White Rose scheme has mapped out the Ready to Progress criteria for each year group.

Year 5 RTP Multiplication & division

Ready to progress criteria	Block	Steps
5MD-1 Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size.	Autumn 3	8 – Multiply by 10, 100 and 1,000 9 – Divide by 10, 100 and 1,000 10 – Multiples of 10, 100 and 1,000
	Summer 3	10 – Multiply by 10, 100 and 1,000 11 – Divide by 10, 100 and 1,000 12 – Multiply and divide decimals - missing values
5MD-2 Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors.	Autumn 3	1 – Multiples 2 – Common multiples 3 – Factors 4 – Common factors 6 – Square numbers
5MD-3 Multiply any whole number with up to 4 digits by any one-digit number using a formal written method.	Spring 1	1 – Multiply up to a 4-digit number by a 1-digit number 2 – Multiply a 2-digit number by a 2-digit number (area model) 3 – Multiply a 2-digit number by a 2-digit number 4 – Multiply a 3-digit number by a 2-digit number 5 – Multiply a 4-digit number by a 2-digit number
5MD-4 Divide a number with up to 4 digits by a one-digit number using a formal written method, and interpret remainders appropriately for the context.	Spring 1	7 – Short division 8 – Divide a 4-digit number by a 1-digit number 9 – Divide with remainders

Children who have not mastered the criteria will be targeted through extra interventions to ensure that they are secure in these concepts. NCETM RTP criteria will be used to support the children with the teaching of these concepts within their intervention sessions.

Mathematical Vocabulary

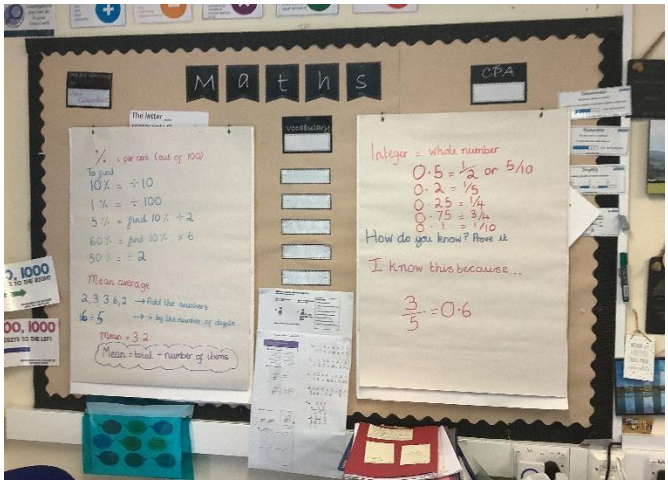
As a school we understand the importance of using the correct vocabulary therefore we use the vocabulary frequently and model the use of language to the children. Vocabulary for the unit is placed on the working wall and referred to throughout the unit. Within lessons teachers may test the children on vocabulary learnt. STEM sentences are used to support the children with learning this vocabulary. As the children move through school their Mathematical vocabulary will expand. We believe that this will help them solve reasoning and problem solving questions more fluently.

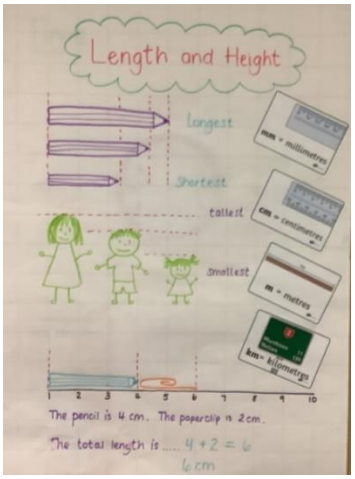
Working Walls

Working walls are used effectively and should include:-

- Vocabulary
- Stem sentences
- Strategies for children to use to support with the lesson
- Where appropriate CPA

Working walls should be referred to where necessary and be updated regularly during a unit.





Equal Opportunities

The school is committed to ensuring the active participation and progress of all children in their learning.

All children will be given equal opportunities to achieve their best possible standard, whatever their current attainment and irrespective of gender, ethnic, social or cultural background, home language or any other aspect that could affect their participation or the progress of which they are capable.

Inclusion

Taking a mastery approach, adaptationn occurs in the support and intervention provided to different children, not in the topics taught, particularly at earlier stages. The National Curriculum states:

> 'Children who grasp concepts rapidly 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 practice, before moving on.'

There is little differentiation in the content taught but the questioning and scaffolding individual children receive in class as they work through problems will differ, with higher attainers challenged through more demanding problems, which deepen their knowledge of the same content before acceleration onto new content. Children's difficulties and misconceptions are identified through immediate formative assessment and addressed with rapid intervention – commonly through individual or small group support later the same day or within the lesson.

A range of inclusion strategies, are embedded in practice and teachers are aware of the special educational needs of the children in their Maths.

Children who have gaps in their mathematical learning will have extra support through targeted interventions. Based on White Rose.

British Values and Maths

Links to British Values in Maths

British Values	KS1	KS2
Democracy	Teamwork in group work. Taking turns to listen to everyone speak and give their answers and explanations.	Teamwork in group work. Taking turns to listen to everyone speak and give their answers and explanations.
Rule of Law	Following rules when playing maths games	Following rules when playing maths games Applying rules in calculations, algebra and geometry.
Individual Liberty	Being allowed to make mistakes and learn from them. In problem solving taking risks to build self	Being allowed to make mistakes and learn from them. In problem solving taking risks. Devising own ways to present ideas and solutions.
Mutual Respect for and tolerance of those with different faiths and beliefs	Teamwork in group work.	Teamwork in group work.

Maths Subject Leader

- The subject leader will raise the profile of Maths at Belton C of E Primary School through best practice. They will model lessons, as appropriate to new staff, NQTs and peers to support continued professional development.
- They will ensure the high quality of Maths displays around the school, present certificates of achievement during assemblies and involve the school in 'celebrations' of Maths, including participation in events such as 'World Maths Day'.
- The subject leader will support staff in providing opportunities for learning outside the classroom in Maths and will identify and organise opportunities which enable this, as appropriate.
- The subject leader will monitor progression and continuity of Maths throughout the school through learning walks and regular monitoring of outcomes of work in Maths exercise books.
- The subject leader will ensure that all staff have access to year group plans and the relevant resources which accompany them.The subject leader will monitor children's progress through the analysis of whole school data. They will use this data to inform the subject development plan which will detail how standards in the subject are to be maintained and developed further.
- The subject leader will, on a regular basis, organise, audit and purchase central and class based Maths resources.

- Through ongoing involvement in the DfE funded Maths Hubs programme - TRG, the subject leader will keep up to date on current developments in Maths education and disseminate information to colleagues.
- The subject leader will extend relationships and make contacts beyond the school.
- The subject leader will develop opportunities for parents/carers to become more involved in Maths education.
- The subject leader will ensure that all staff have access to professional development including observations of outstanding practice in the subject.
- The Maths lead will attend subject leader meetings and CPD which will be disseminated to all staff.

Parents

- The school recognises that parents and carers have a valuable role to play in supporting their child's mathematical learning. An overview of the Maths curriculum is available on the school's website, as well as guidance in the progression in calculation methods used by the school. Paper copies of these documents are also available on request and the curriculum letter, sent home by each year group, also outlines the Maths topics to be covered.
- Activities which link to each Maths topic are suggested for parents and carers to try at home with their child in each Reception newsletter.
- Children are given Maths homework at least once a week from Reception to Year 6. Activities are set on Numbots/ TT Rockstars. These are linked to previous learning or as a pre-teach for the next unit (previous years objectives)
- White Rose Maths Parent Site which supports with Mathematical concepts is linked on our school website. which cover the key content from each year group are available on the school's website.
- Parent Maths Mornings are introduced termly with different themes such as outdoor Maths.
- Parents are informed of their child's progress at Parents Evenings and this is also communicated in written school reports.

Monitoring

The mathematics subject leader and headteacher will monitor the approaches detailed in the policy as per the monitoring calendar. The subject leader will also undertake half termly monitor to ensure high standards in the subject. Monitoring will employ a variety of strategies including work scrutiny, learning walk pupil interviews and termly pupil progress meetings.

Governance

The named link governor for Maths is responsible for meeting with the Maths subject leader to examine the

effectiveness of the policy an any actions/ impact of the school improvement plan relating to Maths.

Catrin Yendall – Maths Lead

Updated:- April 2025

To be reviewed:- September 2025