



Approach to Maths

Our approach is underpinned by the journey to mastery model, where all children are fluent in the unfamiliar and can apply their skills in any new situation. Mastery of the curriculum requires that all children:

- Use mathematical concepts, facts and procedures approximately, flexibly and fluently;
- Recall key number facts with speed and accuracy and use them to calculate and work out unknown facts;
- Have sufficient depth of knowledge and understand to reason and explain mathematical concepts and procedures and use them to solve a variety of problems.

Basic skills

Each year group has a list of maths basic skills that we expect the children to learn by heart. They focus on: number facts and number bonds; counting; addition and subtraction facts; times table and division facts and doubles and halves. On-going assessments of the basic skills enables class teachers to identify the focus for whole class chanting/counting. Children will be exposed to daily counting/chanting. This may be as part of the daily maths lesson or at another time that best suits the class timetable.

	Number facts, number bonds	Counting	Addition and subtraction facts	Times tables and division facts	Doubles and halves
Year 1	Recall compositions of numbers within 10 (Make 7 etc) Recall the odd and even numbers up to 10	Count forwards in steps of 2 to 24 Count backwards in steps of 2 from 24 Count forwards in steps of 5 to 60 Count backwards in steps of 5 from 60 Count forwards in steps of 10 to 120 Count backwards in steps of 10 from 120 Count forwards and backwards to 100 in ones	Know one more and one less than numbers up to 100 Know two more and two less than numbers up to 100 Know 10 more and 10 less than a single digit number		Know double 6, 7, 8, 9, 10 Know half of 12, 14, 16, 18, 20

Starter activities

All lessons begin with a five-minute starter. Starter activities revisit and embed previous learning. The starter tasks for each year group have been carefully mapped out across the year to ensure the recall of key facts and concepts. There is a focus on number, shape and time.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
Autumn 1	Naming 2d and 3d shapes	Read and write numbers to 20 in numerals Doubles 0-10	Compositions within 10 Doubles 6-10	One more, one less Greater than and less than	O'clock and half past	Naming 2d and 3d shapes	Read and write numbers to 20 in numerals Doubles and halves
Autumn 2	O'clock and half past	One more, one less Greater than and less than	Naming 2d and 3d shapes	Compositions within 10	O'clock and half past	Doubles and halves	Read and write numbers to 50 in numerals
Spring 1	Naming 2d and 3d shapes	One more, one less Greater than and less than	Compositions within 10	Doubles and halves	Read and write numbers to 50 in numerals	two more, two less Greater than and less than	O'clock and half past
Spring 2	Compositions within 10	Naming 2d and 3d shapes	O'clock and half past	Read and write numbers to 50 in numerals	Doubles and halves		
Summer 1	two more, two less Greater than and less than	Compositions within 10	O'clock and half past	Read and write numbers to 100 in numerals	Naming 2d and 3d shapes	ten more, ten less	
Summer 2	O'clock and half past	Naming 2d and 3d shapes	ten more, ten less Greater than and less than	Doubles and Halves	Compositions within 10	O'clock and half past	Read and write numbers to 100 in numerals

Main lesson

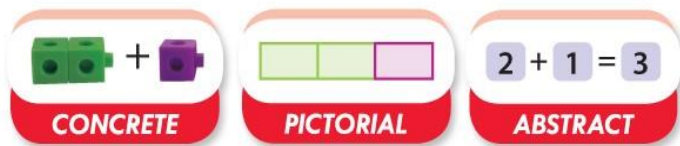
Each year group has a carefully mapped out long and medium term plan. These are created each year based on the previous year's assessment information. Learning is carefully sequenced to ensure continuity between topics and to ensure that topics are revisited over the course of the year.

Autumn 1	Place value	Measure	Fractions	Position and direction	
Autumn 2	Place value	Addition and subtraction	Fractions	Measure	
Spring 1	Place value	Fractions	Measure	Position and direction	
Spring 2	Place value	Addition and subtraction	Multiplication and division	Fractions	
Summer 1	Addition and subtraction	Fractions	Multiplication and division	Position and direction	
Summer 2	Addition and subtraction	Measure	Multiplication and division	Fractions	Place value

The medium-term plan provides the objectives that form the basis of each year groups weekly plan. Teachers then consider the small steps that are required for the children to meet each objective. Teachers make use of the NCETM Curriculum Prioritisation document as within these are the key small steps for each objective along with accompanying slides and teacher guides.

The NCETM Curriculum Prioritisation documents are used alongside high quality resources from White Rose, I See Reasoning and Test Base when teachers are designing tasks. Tasks focus on developing fluency; variation of representation; and reasoning and problem solving.

At Bradley Green, we use a Concrete, Pictorial, Abstract approach to new learning in maths. High quality manipulatives are initially used to help learn new concepts and relate them to previous knowledge. Pictorial representations further embed understanding before the abstract method is introduced. By following this sequential approach to learning, it is expected that children will eventually be able to complete the mathematical problem without the representation.



In line with our mastery approach to teaching maths, children are taught in mixed ability settings which expose all children to high expectations. The use of precise and accurate mathematical language is modelled by all teaching staff and lessons consist of a well-considered balance between teacher input and children working. Teachers use mini plenaries throughout lessons as assessment for learning opportunities, whilst self and peer evaluation allow pupils to measure their own progress. Assessment and feedback in the moment, as well as teacher questioning enables all children to make maximum progress and enables misconceptions to be addressed. Working walls in classrooms are used to support teaching and learning and form part of classroom practice.

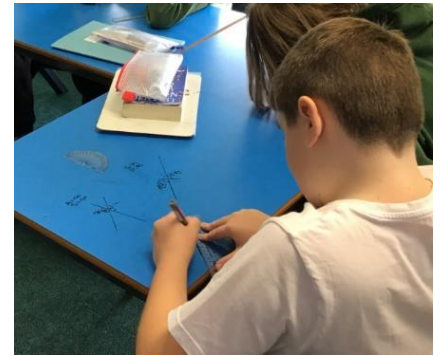
Within all concepts taught, there are opportunities for children to think mathematically, reason and problem solve. Providing challenge to all learners throughout a maths lesson is a crucial element of our approach to teaching maths.

Intervention

The expectation is that most children will engage in the objectives specified in the National Curriculum for their year group and move through the programmes of study at broadly the same pace. Where this is not possible due to the needs of the learner, teachers provide an appropriate alternative curriculum. Teachers intervene daily and provide support, scaffold or additional practise where necessary for children to keep up.

Homework

To support our focus on fluency, we provide pupils with weekly homework as we believe that parents can make a difference through continued home practise. All our children have access to Numbots, Sumdog and TTRS to allow them to continue their maths practice at home.



Maths in EYFS

In EYFS, developing a strong grounding in number is our priority so that all children develop the necessary building blocks to excel mathematically. Children will develop a deep understanding of the numbers to 10, the relationship between them and the patterns within those numbers.

In EYFS, we provide frequent and varied opportunities to build and apply this understanding. We use manipulatives, including tens frames for organising counting. In addition to the work on number, the curriculum in EYFS includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures.

At Bradley Green, we encourage the children in EYFS develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adult and peers about what they notice and not be afraid to make mistakes.

Mastering Number Programme

At Bradley Green, we follow the Mastering Number Programme from the NCETM in Reception, Year 1 and Year 2. The programme aims to secure firm foundations in the development of good number sense for all children.

The aim over time is that children will leave KS1 with fluency in calculation and a confidence and flexibility with number. Because the programme focusses on the key knowledge and understanding needed in Reception, this forms the majority of the Reception Maths curriculum. Year 1 and 2 teach three 10-15 minutes sessions per week in addition to their normal maths lessons.



Times Tables

We know how crucial times tables are in children being able to fluently access much of the maths curriculum. Because of this, we have a carefully sequenced plan of when children will learn their times tables.

Times tables and counting starts from Nursery. Our children have regular opportunities to rehearse and practice counting skills to enable them to have quick recall. In Nursery and Reception children learn number rhymes and have daily opportunities for counting. In Year 1 children continue to retrieve known rhymes and have daily opportunities for counting and skip counting.

From Year 2 to Year 6 we follow the same sequence for learning tables:

- Begin by immersing children in number facts relating to those times table
- Pull out understanding of the times table using manipulatives and concrete resources
- At least three specific lessons per half term on that times table
- Each week, between three and five short retrieval practise sessions on that times table

Multiplication Tables Check - MTC

The MTC is statutory for all year 4 pupils and is an on-screen assessment designed to determine whether pupils can fluently recall their multiplication tables up to 12, through a set of timed questions. The check consists of 25 questions. Pupils will have 6 seconds to answer each question, with 3-seconds pause between questions. Pupils will answer 3 practice questions before the check begins.

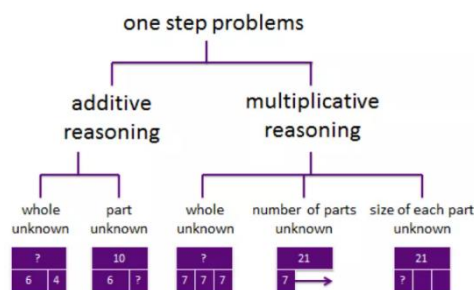
As a school, we learn times tables as follows:

Year 2	1x	2x	5x	10x	0x	Revision of 2, 5 and 10
Year 3	4x	8x	3x	6x	Revision of 2, 5, 10, 4, 8, 3, 6	Revision of 2, 5, 10, 4, 8, 3, 6
Year 4	9x	7x	11x	12x	Revision of all tables facts	Revision of all times tables facts & MTC
Year 5	Revision of all times tables facts – targeted intervention for those that need it					
Year 6	Revision of all times tables facts – targeted intervention for those that need it					

Problem Solving

At Bradley Green we teach maths so children can solve problems. We use problems from White Rose, nrich and NCETM. We give our children the opportunity to think mathematically and explore, question, work systematically, visualise, conjecture, explain, generalise, convince and prove. We use a range of problems such as goal free problems, numberless problems and large problems and investigations. We introduce to children to a range of problem-solving vocabulary and discuss the differences in wording structures for example: *3 more than 8* and *how many more than 3 is 8*.

When teaching children to problem solve, we break problems down using teacher modelling and thinking aloud. We teach children that most one step problems can be broken down into one of these types of problem. Multi step problems are a combination of these.



We begin by asking:

Is the whole unknown or a part unknown?

Using bar modelling can help children visualise the information we know and what we do not know.

Additive reasoning

- If the whole is unknown, add the parts.
- If a part is unknown, subtract the known part(s) from the whole.

Multiplicative reasoning

- If the whole is unknown, how many parts are there and what are they each worth?
- If the number of parts is unknown, what is the whole and how many parts would fit into it?
- If the size of the parts are unknown, what is the whole and how many parts are there?