



The importance of maths

At Berkeley Primary School, our bespoke curriculum is designed to enable our pupils to develop a secure understanding of each area of mathematics, recognising the rich and varied connections between them in an exciting and engaging way. It is our intention to ensure that all children are fluent in the fundamentals of mathematics. Children are encouraged to be flexible and adaptable, applying their mathematical thinking and learning to investigate, reason and solve increasingly sophisticated problems.

Through mathematical talk, children will develop the ability to articulate, discuss and explain their thinking. We aspire to develop a natural curiosity and love of maths, where children are equipped with the confidence, resilience and resourcefulness needed to use maths within all aspects of everyday life. We encourage our pupils to develop a positive growth mindset, build resilience and become creative, critical and independent thinkers.

Maths at Berkeley Primary School will equip children with a skill that empowers them to succeed and thrive through their lives - for personal, academic and professional reasons.

Maths for enrichment and enjoyment

Maths is celebrated throughout school through the use of working wall maths displays in every classroom, which support and encourage our pupils in their maths journey. These displays focus on the area of maths the children are currently learning, showing the prior knowledge they have accomplished to assist them as they move onto their next steps. Displays will change frequently to match the children's current learning and will include the key vocabulary and stem sentences they need to explain their reasoning succinctly, together with good examples of their own work.

Alongside these displays, the Key Stage 1 and 2 buildings celebrate Marvellous Mathematicians by awarding certificates to children who have shown maths resilience, engagement or great effort. Photographs of the recipients are displayed on a central display for the school to see.

We have a range of additional activities that enhance our day to day learning and promote the enjoyment of maths. These include:

- **Anton-** a personalised educational app that enables children to progress at their own pace and level unlocking games and rewards along the way through engaging lessons and exercises.
- **Times Table Rockstars-** an award-winning maths programme that is dedicated to helping children acquire fundamental numeracy skills and become a times table rockstar. Through this, challenges are set to enable our pupils to compete against one-another and other schools.
- **Numbots-** an off-shoot of Times Table Rockstars which is used to support the understanding, recall and fluency in mental addition and subtraction to move on from counting to calculating.
- **Prodigy-** a game-based learning platform that targets all areas of the maths curriculum.

At Berkeley Primary School, we hold a Maths Challenge morning annually where parents/carers are invited into school to take part in hands-on maths challenges and puzzles in a fun and engaging way. The children visit each teacher in their year group to tackle a range of different challenges.

Widening our children's mathematical vocabulary

Communication and acquiring mathematical language and vocabulary are essential tools in maths. Children need to be able to talk about the processes they have used, verbally reason and provide explanations and justifications.

At Berkeley Primary School, we encourage the use of Talk Partners wherever possible and each class displays Maths talk sentence starters. Within our plans we have a clear outline of the mathematical language children need to be taught and learn to enable them to talk like maths experts. We support the children in this journey through the use of stem sentences which scaffold and support their ability to reason both verbally and in writing. During lessons, children are encouraged to give their reasons in full sentences when responding verbally to enhance their mathematical thinking and oracy skills.

The maths journey at Berkeley Primary School

Our maths curriculum is bespoke for our school and is a spiral curriculum, in which daily lessons cover the required curriculum content and re-visit prior concepts to encourage essential learning connections and consolidate understanding. At the start of each term, we prioritise the mathematical understanding the children need to be able to access for other areas of the curriculum, for example in Science, History and Geography.

Our journey for mathematics starts in the Early Years. We follow a curriculum model that covers the six areas of maths and ensures progression from Nursery to Reception with clear links into the Year 1 curriculum. The journey continues in Years 1-6 through the implementation of the 2014 National Curriculum. We ensure that our children become fluent in the fundamentals of mathematics, are able to reason mathematically and apply their mathematical understanding to a variety of problems. We have outlined the order in which we will teach our units of work to enable us to cover all elements of the statutory and non-statutory statements of the National Curriculum. We teach in short blocks, using a spiral curriculum to allow us to revisit and consolidate prior learning throughout the year.

At Berkeley Primary School, we have invested in quality resources from White Rose which we use as a base to our small steps journey through maths. Alongside this, we supplement our lessons with other quality resources such as I See Reasoning, I See Problem Solving and Rising Stars. We follow a small steps to mastery approach in our planning and delivery of maths to allow our children to build upon their prior learning and make links between the six areas of maths.

Fluency, reasoning and problem-solving skills are embedded within maths lessons and are developed consistently over time. By ensuring that children secure their fluency skills before moving on to more complex maths, we develop children's confidence to tackle a variety of problems either independently or in collaboration with their peers. Oracy is a key element in our maths lessons. In every lesson, the children have opportunities to use their maths vocabulary and use their manipulatives as a tool for talking. Vocabulary is taught explicitly according to a school-wide progression plan. All children are given the opportunity to reason at their own level using the 5 stages of reasoning; describe, explain, convince, justify and prove through both talking and writing.

What our maths lessons look like

Early Years (Nurs & Recp)	In our Early Years, maths is delivered and explored through continuous provision in both the indoor and outdoor areas. The children also have targeted small group or 1:1 activities to develop and assess their maths understanding and application. Alongside this, they also follow the NCETM Mastering Number programme that is taught explicitly, daily.
	Through accessing the continuous provision available, our children can develop their understanding of number through exploration and play. The activities available range from sand and water troughs, measuring equipment for length and capacity, a variety of small world items for counting and ordering, shapes to create patterns and a cooking area for baking with supervision.
Years 1 and 2	In Year 1 and 2, Maths is taught in both the morning and afternoon. The morning sessions are used to teach new content and key skills and the afternoon sessions focus on counting and fluency. These fluency sessions build upon prior learning to ensure they are embedded and secure before moving onto new skills. We use Flashback 4 from White Rose to support consolidation of previously learnt mathematical knowledge.
Year 2 - 6	In Years 2 to 6, maths lessons begin with times tables practice, where the children chant the times tables they are learning and complete a timed booklet with multiplication and division questions for this times table. Each lesson then has a counting and a fluency session, which includes the use of White Rose Flashback 4 resources, of around 10-15 minutes to ensure that children are retaining the core skills identified to prepare them for their learning in the main lesson. Fluency sessions include a maximum of 8 questions.

	Objectives may be covered over more than one lesson to ensure that children have had sufficient time to secure their understanding and work at a deeper level within the objective. Depending on which stage of the objective is being taught, there will be a range of modelling, whole class work, group work, independent practice and challenge activities evident within the lesson sequence. Teachers are skilled in knowing which resources best model mathematical concepts and how to move children onto pictorial representations and then onto more abstract understanding. Teachers model effective use of vocabulary through all stages of the lesson and this is reinforced through the use of working walls which link vocabulary to the concrete, pictorial and abstract representations of the concepts being taught. As we take a mastery approach to our maths learning, all children (unless they are working pre-key stage) are exposed to the same learning with additional support provided by means of manipulatives, scaffolding or adult support as befits their need/availability of need. Within the main portion of the lesson, children will be encouraged to move onto a Deeper Learning Opportunity (DLO), in which they will apply the skills they have learnt to an unfamiliar problem, often including more than one aspect of maths. Through carefully crafted questions, teachers extend the more able children to think about and apply their maths skills more deeply. This may require them to use other areas of maths to identify patterns within questions, spot mistakes or compose written explanations for their answers. These children may also become class experts and provide support for their peers.
Multiplication Tables	
At Berkeley Primary School, we have a programme of times tables teaching from Year 2 to Year 4. Whole lessons are devoted to teaching multiplication facts when the children first encounter a times table. Manipulatives, such as Numicon, blocks and counters, and representations, e.g. arrays, are used during these sessions to enable our children to visualise the facts they are learning. After the times table has been taught, we use a structured approach to practising our times tables. Times tables are practised daily from Year 2 onwards, with the whole class focusing on one previously taught times table together. Children chant their times table in a set format (e.g. two twos are four, two threes are six). The focus times table is displayed on the screen for children to use as a tool to consolidate previously learnt times tables facts, as these sessions are practices, not tests. The children then complete a section of their practice booklet, in a suitable time for their age group, before marking and chanting the answers as a whole class to further reinforce recall of individual facts. Every half term, our children are assessed on the times tables they should know for their year group and this is tracked and monitored to ensure progression and intervention is provided where necessary. From this, 1:1 times table interventions are put in place to target and support individuals requiring extra practice. In the June of Year 4, pupils are tested by the DfE on their times table recall through the national Multiplication Tables Check, in which 25 mixed times tables are asked.	
Assessment	
We assess children's maths formatively throughout the teaching units. This enables us to tailor our planning to meet children's next steps and provide individual feedback and support to enable children to make progress with their maths. Each child is given a summative maths judgement, which is recorded on Insight, termly. To support our summative assessments, NFER tests are conducted termly from the Spring Term in Year 2 until the Summer Term in Year 5. Year 6 complete several previous SATs papers throughout the year. Each term we review children's mathematical knowledge and understanding and moderate our assessments as a year group. Parents are informed throughout the year about their child's progress in maths, through parent consultation meetings and their school report. At the end of Reception, we use the DfE maths criteria to provide an end of EYFS summative judgement. This is reported to the DfE and parents. In Year 6, the children complete their SATs tests. These are national tests at the end of Key Stage 2 in which there are three maths papers: arithmetic, reasoning paper 1 and reasoning paper 2. Parents are informed of these outcomes and the results are passed on to the children's secondary school.	

Mathematical Resources

Alongside the resources we have invested in to support quality teaching, the children also have access to a range of practical manipulatives to support them with their counting and calculations. These resources include Numicon, Base 10, place value counters and Cuisenaire rods. Each classroom is also equipped with a Promethean Board which has a range of interactive maths tools such as protractors, rulers, shape generators and dice rollers.

Each building across the school also has a well-equipped general maths store, where a range of mathematical resources are available to meet the objectives for each area of maths such as measuring jugs, weights, 2D and 3D shapes, money and clocks.

Additional support for those children that need it

Our aim is for all children to be fluent in maths by the time they leave Berkeley Primary School. In order to achieve this, early identification of gaps and a need for support is crucial. All teachers and TAs are trained in formative assessment to be able to identify and address misconceptions and gaps in knowledge as they arise in maths lessons. We believe that targeted, in the moment, support is the most effective way to progress children's maths knowledge and skills.

When children have been identified as needing further support, we run an intervention programme called 'Number Stacks'. Number Stacks uses a unique combination of stackable place-value counters and video tutorials to enable children to master the foundations of the number system. This programme is delivered in 15-minute blocks, three times weekly in groups of no more than 2 children to allow this to be targeted and bespoke. The children are assessed initially to identify the level of need and then again after each unit is delivered to monitor progress.

Our SENDCo will also screen children for Dyscalculia if a child continues to show particular difficulty in understanding and working with numbers following individual intervention. The impact of such difficulties on an individual's mathematical ability can vary across individuals and across their lifespan. With dyscalculia, we may see age-related difficulties with naming, ordering and comparing physical quantities and number, estimating and place value. Following this screening, teachers will implement strategies recommended by the SENDCo and monitor their effectiveness.

As the children enter Year 6 and approach their Key Stage 2 SATs tests, we identify children requiring extra support with their arithmetic and problem-solving skills and provide 1:1 or 1:2 tutoring, delivered by teachers from across the school. These are carried out from the Autumn term until the SATs tests are completed. Alongside this, we also identify our children working at or with the ability to achieve Greater Depth in maths and provide booster groups to support these children achieve their full potential.

How carers can help

Carers are, of course, partners in their child's maths journey. We'll make sure parents are well communicated with about what is happening with maths in school. We always let you know how well your child is doing and how you can support your child at home too.

Parents and carers of Berkeley Primary School children are encouraged to take an active role in developing their child's maths skills through engaging and practical activities. Involving your child in maths-based conversations and activities will help them to become fluent and confident mathematicians. Ways in which you can help develop your child's confidence in maths include:

- Counting and finding numbers in the wide world together often, for example when walking home from school look at house numbers, numbers on car registration plates, road signs, shop windows.
- Counting coloured cars on a journey.
- Asking them to find and total prices whilst at the shop, using money and coins to pay for things.
- Telling the time at set intervals of the day.
- Measuring out ingredients whilst cooking.
- Counting crockery or cutlery out whilst setting the table for meal times.
- Playing board games that involve counting, including addition and subtraction games such as darts.
- Asking times tables facts too.