Beech Hill School Mathematics Policy



Updated by Becky Creighton – September 2023. Review September 2024 The purpose of this maths policy is to outline the teaching, organisation and management of the mathematics taught and learnt at Beech Hill School. The policy has been updated and the implementation of this policy is the responsibility of all teaching and support staff within the school.

Intent

Mathematics plays a vital role in everyday life. It is a fundamental element to all aspects of life which is why we strive to ensure that all children at Beech Hill develop a healthy and enthusiastic attitude towards mathematics. Mathematics provides pupils with a means of making sense of the world in which they live. Building on experiences both in and out of the classroom, it encourages their thinking and reasoning skills to flourish. It embraces natural curiosity and develops the confidence to tackle situations that arise in mathematics and other curriculum areas.

Our aim at Beech Hill School is for all children to enjoy mathematics and to develop a secure and deep understanding of fundamental mathematical concepts. We aim to equip children with a powerful set of tools to help them understand and succeed in the world. These tools include problem solving skills, logical reasoning skills and the ability to think in abstract ways. Mathematics is important in everyday life. It is integral to all aspects of life and with this in mind we endeavour to ensure that children develop a positive and enthusiastic attitude towards mathematics that will stay with them.

The National Curriculum order for mathematics describes in detail what pupils must learn in each year group. Combined with our calculation policy, this ensures continuity and progression and high expectations for attainment in mathematics.

How we teach mathematics

At Beech Hill, we teach the National Curriculum. We follow the White Rose Maths sequence of units for each year group from Reception to year 6. Nursery follow our own long-term plan working through the 5 principles of counting, number recognition using Ten Town, different representations for number such as Numicon, subitising, understanding of pattern, basic shape and directional and prepositional language.

In years 1-6, each objective is taught through fluency, varied fluency, problem solving and reasoning activities. This is to ensure pupils develop a deep understanding of the mathematical concepts being taught. A range of high-quality resources are used including: Abacus Textbooks, I See Reasoning, I See Problem Solving resources, NCETM, White Rose Hub Maths resources and Nrich activities. If a pupil fails to grasp a concept or is struggling, this is identified quickly and intervention is put in place in lessons to ensure children receive the help from the teacher that they need. We use resources such as Numberstacks and LBQ to help consolidate knowledge to ensure pupils are ready to move forward in the next lesson. In year 1 and 2, we use the Mastering Number programme to help our children in KS1 with basic number facts and mental calculation.

EYFS children at Beech Hill explore mathematical concepts through active exploration and their everyday play-based learning. Children are taught key concepts and develop number sense using a hands-on, practical approach. EYFS practitioners provide opportunities for children to manipulate a variety of objects which supports their understanding of quantity and number. Pupils explore the 'story' of numbers to twenty and the development of models and images for numbers as a solid foundation for further progress. The CPA approach is used when teaching children key mathematical skills. Practitioners allow children time for exploration and the use of concrete objects helps to support children's mathematical understanding. Mathematics in the early years provides children with a solid foundation that

will enable them to develop skills as they progress through their schooling and ensures children are ready for the National Curriculum. The use of Ten Town in EYFS gives the children strong knowledge of number, helping them become ready for Year 1.

<u>Aims</u>

- To deliver quality first teaching to all pupils.
- To provide the resources needed to support progress.
- For pupils to become fluent in the fundamentals of mathematics.
- For pupils to develop a deep conceptual understanding in the fundamentals of mathematics.
- To develop pupils rapid recall of number facts.
- For pupils to explain their methods and reasoning mathematically and to justify their reasoning with the correct use of mathematical vocabulary.
- Make sense of number problems, including non-routine / 'real' problems and identify the operations needed to solve them.
- For pupils to become confident, independent learners.

Implementation

<u>Teaching</u>

Pupils are provided with a variety of opportunities to develop their mathematical skills, including:

- Group work.
- Paired work.
- Whole class teaching.
- Catch up/ intervention in lessons
- Occasional catch up in afternoons or morning registration if needed

Pupils engage in:

- Concrete, pictorial and abstract methods.
- Practical work.
- Investigational work.
- Problem solving and reasoning.
- Mathematical discussion.
- Maths games.

What should we see in a Beech Hill mathe lesson?



There might be opportunities for learning outside using the 'maths mat'

Mathematics contributes to many subjects and it is important the children are given opportunities to apply and use mathematics in real contexts. Therefore, pupils at Beech Hill are given the opportunity to develop their numeracy skills across the curriculum. There are carefully planned opportunities for measuring in science and technology. Properties of shape and geometric patterns may be studied in art and the collection and presentation of data is a skill which is practised in science, history, geography and computing.

We endeavour at all times to set work that is challenging, motivating and encourages the pupils to think about how they learn and to talk about what they have been learning. Additional enrichment opportunities are provided for pupils to further develop mathematical thinking e.g. through cooking, music, and maths investigations and games.

In EYFS, Maths is planned for Reception pupils collectively by the Reception teachers. Reception teachers meet weekly to discuss the aims for the following week. During this meeting teachers share ideas for taught maths sessions and discuss how maths can be embedded through enhancements to the continuous provision. Reception teachers also feed back any ideas from Nursery Nurses which have been discussed within class. Reception teachers take it in turns (half termly) to write up a weekly maths plan, which is followed by all 3 reception classes. Reception teachers also take it in turns (half termly) to complete the continuous provision planning, which is then embedded by all staff members. In Reception, White Rose Maths Hub, the EYFS framework and Early Learning Goals, The National Centre for Excellence in the Teaching of Maths Guidance and the Learning Trajectories Guidance are used to design our maths curriculum. Ten Town and Numberblocks are frequently used as supporting resources.

When looking at number, one number is focussed on over the course of approximately two weeks. For each number the children explore counting, comparison, composition and change. Maths lessons regularly revisit key mathematical concepts throughout the Reception year to embed learning.

Teaching approaches Y1-6

Teachers use a range of teaching strategies to engage the children in maths and ensure progress is made by all children within a class; no set formula is used. A typical lesson might include:

- Both teaching input and pupil activities,
- A balance between whole class, guided grouped and independent work, (groups, pairs and individual work)
- Effectively differentiated activities/objectives where needed and appropriate challenge for all abilities.

Sometimes the focus for the session is new learning. At other times pupils may be practising to master the application of a concept they have learned earlier. The focus of the session may vary for different children depending on their learning needs.

At times there may be opportunities to develop skills and understanding of mathematics through additional activities, some of which may take place at home. The school has invested in a subscription to Times Table Rock Stars, which is an accessible learning platform that can be used to practice the rapid recall of multiplication and related facts.

Teachers plan learning that is differentiated to meet the needs of all pupils, whether they have a specific learning difficulty in maths or whether they are particularly able.

Teachers endeavour to differentiate learning appropriately for all pupils – possibly with individual work for a pupil with SEND at one end of the achievement spectrum, to individual work for a pupil working at greater depth at the other.

Teaching approaches in EYFS

In EYFS, maths is taught discretely in Reception each afternoon from 1:00 until 1:20. This is extended from 1:00 until 1:30 in the Summer Term. The 'Teaching to the Top' strategy is used in Reception and therefore pupils do not work in set ability groups. Children who might need some extra support are supported by teaching staff and more able pupils with the lesson.

Maths lessons take part on the class carpet and will begin with a whole class input where the teacher will introduce and model a concept. A concept is always introduced through the use of manipulatives. The class will then usually split into two mixed ability groups, where they will work with either the teacher or Nursery Nurse to practise this concept using manipulatives. Both groups will then join together to recap and share what they have learnt.

Manipulatives used in reception;

- Numicon
- Counters
- Counting objects such as compare bears
- 10 frames
- Part- part- whole models
- Dice
- Real life objects

Within the classroom there is an explicit Maths area which children can access independently during continuous provision. Resources within this area open ended and are frequently changed to reflect what pupils have been learning in the structured maths lessons. It is here where pupils will practise and apply the concepts which they have learnt during the structured maths lessons independently. This area also consists of resources to support previous learning, allowing pupils to revisit and recap previous mathematical learning.

Maths is not however limited to this area of the classroom and is often discreetly embedded throughout other classroom areas such as sand and water play, play dough, role play, games and ICT. Staff encourage pupils to explore concepts, experiment and investigate to develop their mathematical understanding through play in a range of areas within the classroom.

Impact

Assessment and feedback Years 1-6

Formative Assessment

Teachers integrate the use of ongoing, formative assessment strategies such as effective questioning, clear learning objectives, the use of success criteria and effective feedback and response in their teaching. The pupils' work is marked live, during the lesson where possible and teachers give verbal feedback where needed to help move the child's learning forward. This will be evidenced in the child's book with VF written in green pen if it is from the teacher or purple pen if the verbal feedback was provided by the TA. The impact of that verbal feedback should be seen in the children's work after it has been given.

Books are looked at before the next lesson wherever possible and this assessment is used to inform teachers' planning. Peer and self-assessment are important tools, which are used in some maths lessons in which the children will mark their own, or others, work with pink pen.

Summative Assessment

At the end of each term, pupils take NFER tests which guide the teachers when assessing as they provide an age standardised score. This is recorded on our whole school assessment system, Target Tracker. We also share this information with parents' during parents' evenings and end of year reports. Year 6 teachers use past SATs papers to aid their teacher assessment in maths rather than the NFER tests.

From September 2020, Target Tracker will be used as assessment tool to track children's learning against the National Curriculum statements for each area of maths. As well as tracking the 'steps' for each child termly based on their summative assessments, teachers can also track learning for each child based on their formative assessment and day to day learning. This will inform future planning and intervention.

Assessment and feedback in EYFS

In EYFS, formative and summative assessment is used to identify pupils working below the expected level as well as those who are making slowed progress in maths. Once pupils have been identified, teachers plan a range of maths interventions based on the needs of pupils. These interventions are led by a range of staff including; teachers, Nursery Nurses and 1:1 support assistants. Reception also employs a Nursery Nurse, who is not assigned to a specific class, but works across all 3 classes to plan and lead interventions. All interventions are logged and pupil progress is tracked on the Edukey provision map.

Each child completes a baseline assessment in maths (Number and Space, Shape and Measure) within the first 6 weeks of them starting school. Within this first 6-week period, teachers will also collect evidence in the form of photos/ video observations and speech samples. This evidence is collected and stored using Seesaw/Early Essence. Each piece of evidence is levelled against the Development Matters age bands and Characteristics of Effective learning. Each observation also provides pupils with a next step for learning. This next step is shared with the pupil and they are supported through lessons and provision to achieving it. Pupil next steps are displayed in the classroom to ensure that all members of staff across Reception have easy access to each pupil next steps. This is essential as we are an open plan classroom working with pupils across three different classes.

After the initial 6-week baseline period teachers will then collate evidence to make a professional judgement as to where a child is working at in both Number and Space, Shape and Measure. Pupils are given a score for each area, linked to the Development Matters age bands. This score is inputted on their learning graph on Early Essence.

All staff members continue to document pupils' achievements throughout the year (2 per month per pupil), collecting photo / video evidence, work samples and speech samples which are all levelled against the Development Matters age bands and Characteristics of Effective Learning (formative assessment). Staff also continue to set next steps for each pupil based on their observations. At the Autumn 2, Spring 2 and Summer 2 assessment points, teachers will also complete a maths assessment with each pupil on a 1:1 basis to check understanding of mathematical concepts taught to date. Teachers will then collate all of the above evidence, as well as their own knowledge of each child, to score pupils in both Number and Space, Shape and Measure (summative assessment). This score is inputted to

each child's learning graph on Early Essence. Pupil data is analysed at both assessment points, allowing for any pupils who are making slowed progress in maths to be recognised. At the end of the year, pupils are assessed against the Early Learning Goals in Number and Shape, Space and Measure to form their Early Years Foundation Stage Profile (EYFSP). Pupils can achieve one of the following grades;

Emerging – the child's learning is developing in an area but is not yet at the expected level and has not met the Early Learning Goals

Expected – the child's learning is at the expected level and has met the Early Learning Goals

*During Autumn 1 & 2, Spring 1 & 2 and Summer 1 pupils cannot be assed against the Early Learning Goals, and are therefore assessed using the Development Matters Age bands. Pupils are only assessed against the Early Learning Goals during Summer 2.