



Beeston Primary School

Maths Policy

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Responsible for this policy	<i>Jessica Taylor and Amy Palmer</i>

Curriculum Intent Statement: Broad, Balanced and Ambitious

At Beeston primary School, our well planned and sequenced curriculum combined with high quality teaching and resourcing ensures that children are supported to be well rounded young people with a thirst for learning.

Maths Statement:

Maths Intent:

Maths is a core subject and teaches children how to make sense of the world around them, through developing their ability to calculate, reason and solve problems. It enables children to understand relationships and patterns in both number and space across the curriculum and in their everyday lives. We aim for children to become fluent in all areas of Maths and to be able to apply all processes across the curriculum. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures over the centuries to the development and application of mathematics.

Our objectives in the teaching of Maths are to:

- Ensure children become fluent in the fundamentals of Maths, developing their conceptual understanding and ability to recall and apply knowledge rapidly and accurately.
- Develop children's ability to solve problems, to think logically and to work systematically and accurately in a range of contexts.
- Ensure that children are equipped with the mathematical vocabulary needed to develop an argument, justify and prove their ideas.
- Develop reasoning skills so that children can identify patterns and relationships.
- Present Maths as a challenging, exciting and relevant subject and in doing so, ensure children become confident, resilient and creative mathematicians.

Maths Curriculum Content:

Foundation Stage

Foundation Stage teach Maths as an integral part of the topic work covered during the year. They relate the scientific aspects of the children's work to the objectives set out in the Early Learning Goals (ELGs), which underpin the curriculum planning for children aged three to five. Maths makes a significant contribution to the objective in the ELGs of developing a child's knowledge of Number and Numerical Patterns; primarily, through the use of questioning, investigations and observations. They make links with parents/carers by sharing tasks from school and developing them at home. This is done wherever possible, to involve learning beyond the classroom.

Each year group follows the Maths National Curriculum 2014 and include the following topics in their Long term Curriculum Map. **See separate Long Term Plans for Maths.**

Curriculum Drivers:

Our School Curriculum Drivers underpin the development work which we undertake in all areas of school life and ensure our curriculum offer is enriched and personalised to meet the needs of our community. As Mathematicians we support our Drivers in many ways e.g.:

Our Place in Our World: Children will recognise the importance of Maths in making sense of the world around us. They will be provided with opportunities to identify patterns and sequences that occur in the world we live in. Through practical tasks and real-life problems children will understand the value of mathematical skills, which run throughout their lives, from acquiring skills as a child to using them as an adult at work and in the home. By making links across the curriculum and celebrating World Maths Day children will appreciate the part Maths has played in the development of science, technology and our civilisation and the contribution made by many cultures.

Aspiring Entrepreneurs: During Enterprise Week children have the opportunity to become businessmen and businesswomen. By designing and creating products to sell at the School Fayre, children will use their mathematical skills to understand the importance of budgeting and what is meant by profit and loss. Through data analysis children will be able to identify the trends and patterns of their consumers and business mistakes they can learn from.

Inquisitive Investigators: Across school, Maths lessons often begin with a problem which encourages children to address misconceptions early on. The use of RICS and Diagnostic Questions, prompts discussion and allows children to explore mathematical vocabulary. Through a range of Maths investigations and Nrich challenges, children have the opportunity to ask questions, find multiple solutions and work collaboratively with their peers. Sentence stems support children in explaining their thinking and justifying their findings.

Healthy and Happy Living: Children are encouraged to have a Growth mindset when tackling challenging concepts in Maths. They are taught the importance of resilience and 'trial and error' methods in their journey to success. Children are able to enjoy outdoor and active learning opportunities, including Number Trails in EYFS and Maths Orienteering in KS1 and KS2. Children learn about different food groups and the importance of regular exercise. By using a range of mathematical representations including Venn diagrams, pie charts and line graphs children can learn about the importance of a balanced diet and the effects of exercise on the body.

Cross Curricular Links

The skills that children develop in Maths are applied across our curriculum. The problems solving skills that they develop enable children to tackle challenges and problems in Science, P.E. and in many real life situations. Children are often required to use data handling skills in Science, analysing results and producing graphs and charts to present their findings. Shape and space work is linked with Art and Design and Technology lessons.

Mathematics contributes to the teaching of English across school, actively promoting skills in Reading, Writing, Speaking and Listening. The use of RICs in school encourages children to read and interpret problems, individually and with their peers, and identify the maths involved. Lessons often involve discussions around a problem where children are required to explain and present their thinking and reasoning to the class. Younger children enjoy stories, rhymes that link to counting and sequencing. Older children encounter mathematical vocabulary, tables and charts using non-fiction texts.

Information and communication technology enhances the teaching of Maths significantly. Teachers often use software to present information visually, dynamically and interactively, so that children understand concepts more quickly. Younger children use ICT to communicate results with appropriate mathematical symbols. Older children use it to produce graphs and tables when explaining their results or when creating repeating patterns such as tessellations. Children are also taught to recognise the use of repetition, patterns and sequences in algorithms when creating interactive games on Scratch.

ICT is used at whole-class, group and independent levels. The use of smartboards throughout school permits the calculation process to be modelled effectively and for this to be an interactive and shared activity. A wide range of interactive games, measuring tools and software are used to develop specific skills across the Maths curriculum. For instance, our subscription to Times Tables Rock Stars allows children to improve their accuracy and recall at speed when answering multiplication questions both at home and in school.

Staff Development /INSET:

Opportunities are taken for staff to undertake training in Maths to develop and reinforce their knowledge, understanding and teaching of the subject. Teachers are

given opportunities throughout the year to discuss and reflect on what makes a Maths lesson great and how children learn best in Maths. If gaps in a teacher's understanding are identified in book reviews, learning walks and pupil interviews then appropriate support would be put into place to support that teacher and ensure their Maths teaching becomes stronger and more secure. Staff expertise from within Beeston Primary School, other schools or outside agencies is often used to support staff development.

Implementation:

- White Rose Maths Schemes of Learning are followed so that there is clear progression across each year group and learning is built upon, year by year
- Fluency and Problem Solving or Reasoning takes place in every lesson.
- Lessons are differentiated to ensure the needs of SEND and more able children are met.
- Maths working walls display key vocabulary and is referred to throughout lessons.
- Daily 10 sessions develop children's fluency skills, revisiting previously learned knowledge, concepts and procedures, ensuing mathematical knowledge is embedded.
- TT Rockstars is used to develop children's fluency in times tables and related facts.
- Practical maths equipment is available in all classrooms to support children in exploring concrete, pictorial and abstract ways of working. Equipment displayed in classrooms so that children can self-select and become more self-sufficient.
- Maths events and workshops inside and outside school allow the subject leader to share best practice on how to challenge more able children.

Resources

There are a range of resources to support the teaching of Maths across the school and a great emphasis is placed on using equipment to support children's learning. All resources are clearly labelled and readily accessible to children and they are encouraged to self-select the resources or equipment they require to complete a given activity. All classes have a variety of age-appropriate resources to support the learning (such as number lines, number tracks, counters, calculators, shapes, mirrors etc.). Foundation Stage classes provide maths areas where there are challenges, games or role-play activities available to children. Interactive games such as Times Tables Rock Stars are available on the interactive whiteboards and in the ICT suite.

Resources that are not used regularly are stored centrally and available in the Maths cupboard. There are also numerous resources, including the recently updated Calculation Policy, available electronically for staff on the Shared Drive or through online subscriptions e.g. Classroom Secrets. Resources are audited regularly, and staff are consulted to ensure they have the necessary resources to teach engaging lessons. Teachers are given the opportunity at the beginning of each school year to order new resources.

World Maths Day

We celebrate World Maths Day every year at Beeston Primary School. Each year group is encouraged to link Maths to their half term topics and ensure it is woven into the curriculum subjects taught throughout that day. Children from Nursery up to Year 6 are given the opportunity to take part in age appropriate Maths workshops which aim to engage and excite children in this subject.

Spiritual, Moral, Social and Cultural Development:

Children's Spiritual, Moral, Social and Cultural Development is an important part of our Maths Curriculum, as evidenced by the following examples:

Spiritual: The study of Maths enables children to make sense of the world around them and we strive to enable our children to explore the connections between their numeracy skills and every-day life. Developing deep thinking and an ability to question the way in which the world works promotes their spiritual growth as well as a sense of personal achievement in solving problem. Children are encouraged to see the sequences, patterns, symmetry and scale both in the man-made and the natural world and to use maths as a tool to explore it more fully. This may include looking at the symmetry of snowflakes, the stripes of a tiger or the Fibonacci sequence.

Moral: The moral development of children is embedded into the teaching of Maths. Children are provided with opportunities to use their maths skills in real life contexts, applying and exploring the skills required in solving various problems. For example, children will often vote on School Council agendas or class decisions whilst gathering the information in an appropriate manner. Children are then encouraged to analyse data and consider the implications of misleading or biased statistical calculations. All students are made aware of the fact that the misuse of data can lead to various consequences.

Social: Problem solving skills and teamwork are fundamental to Maths through creative thinking, discussion, explaining and presenting ideas. Children are always encouraged to explain concepts to each other and support each other in their learning. In this manner, students realise their own strengths and feel a sense of achievement which often boosts confidence. Over time they become more independent and resilient learners.

Cultural: Maths is a universal language with a myriad of cultural inputs throughout the ages. Various approaches to Maths from around the world are used and this provides an opportunity to discuss their origins. This includes different multiplication methods from China, algebra, Roman Numerals and coding systems used during World War II. We try to develop an awareness of both the history of Maths alongside the realisation that many topics we still learn today have travelled across the world and are used internationally.

Equality:

At Beeston Primary School we aim to promote equality and develop positive relationships, by tackling any form of discrimination. As part of our duty under the Equality Act 2010 and the Public Sector Equality Duty we aim to eliminate discrimination, advance equality of opportunity and foster good relations in relation to the protected characteristics. We make reasonable adjustments to remove any barriers that may prevent children from participating in all aspects of school life, making progress and achieving their full potential. We make reasonable adjustments to remove barriers to access and participation that may prevent parents and carers being fully involved in the wider education of their child at school. (See Equalities policy).

Diversity:

At Beeston Primary we aim to create a diverse curriculum which reflects the diversity of our pupils, our local and wider community. We celebrate diversity by learning about a broad range of mathematicians including the work of Alan Turing at Bletchley Park, whilst celebrating the role of women codebreakers during World War II. We also explore the work of Florence Nightingale and her use of statistics to improve nursing practices. When investigating number sequences and patterns we draw on the work of Fibonacci, as well as the work of Srinivasa Ramanujan when studying fractions. This provides the opportunity to see a wide range of humanity, see people to which they can aspire that are similar to themselves and develop tolerance and understanding of people with different beliefs, religions, genders, abilities and sexual orientations.

Inclusion:

At Beeston Primary School, we teach Maths to all children, whatever their ability and individual needs. Maths forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our Maths teaching, we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents, and those learning English as an additional language, and we take all reasonable steps to achieve this. For further details, see separate policies: Special Educational Needs; Disability Discrimination; Gifted and Talented Children; English as an Additional Language (EAL).

When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style, and differentiation – so that we can take some additional or different action to enable the child to learn more effectively. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels. This ensures that our teaching is matched to the child's needs.

Intervention through School Action and School Action Plus will lead to the creation of an Individual Education Plan (IEP) for children with special educational needs. The IEP may include as appropriate specific targets relating to Maths.

We enable all pupils to have access to the full range of activities involved in learning Maths. Where children are able to participate in activities outside the classroom we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

Teaching assistants provide help by using:

- Calculations or visual support that is more easy to read and understand
- Calculations in different formats or following different methods
- ICT and other technological aids
- Alternative communication such as signs or symbols
- Translators and amanuenses

Impact:

- All children leave Beeston Primary School with the necessary skills to take them on to further education.
- Children enjoy their Maths lessons and talk positively about what they are learning.
- Children talk confidently about Maths using appropriate mathematical vocabulary and by justifying and explaining their reasoning.
- Children are able to demonstrate their understanding of a range of mathematical concepts in a variety of ways, using concrete apparatus, diagrams and visual representations and also by using more abstract methods.
- Children of all abilities have a growth mindset towards Maths, evidenced by observations and pupil voice.
- Children make excellent progress from their often low starting points despite the many barriers they face.
- Children demonstrate their resilience in problem solving and reasoning and are able to work independently and collaboratively to reach a solution.
- Engagement with TT Rockstars increases so that a larger percentage of children are active players, leading to children being more fluent in recall of their times tables and related facts.
- Children working at greater depth are appropriately challenged and continue to make good progress.

Assessment:

Teachers assess children's work in Maths in three phases. The short-term assessments that teachers make as part of every lesson help them to adjust their daily plans. They match these short-term assessments closely to the teaching objectives. Written or verbal feedback is given to guide children's progress which is linked to success criteria

and/or the learning objective; this includes how they can improve their work or their next steps. All children are encouraged to make their own judgements about how they can improve their own work.

We make medium-term assessments to measure progress against the key objectives, and to help us plan the next unit of work. We use Classroom Monitor to track and plan children's individual progress and stages of achievement throughout the year.

Teachers make long-term assessments towards the end of each school year and they use these to assess progress against school and national targets. With the help of these assessments they are able to set targets for the next school year and to summarise the progress of each child before discussing it with the child's parents or carers. The next teacher then uses these long-term assessments as the planning basis for the new school year. These are supported by end of unit assessments carried out in class at the end of each half term.

The Maths Subject Leader keeps samples of children's work in a portfolio. This demonstrates the expected level of achievement in Maths in each year of the school. Teachers meet regularly to review individual examples of work using national exemplification material. Children are encouraged to make judgements about how they can improve their own and each other's work.

All children practice their times tables on a weekly basis. Times table activities are incorporated into Maths lesson starters and Daily 10 questions. Alongside this, the children are given Times Tables Rock Stars (TTRS) test sheets to improve their recall speed in a set timeframe. At the end of each half term, the children complete a TTRS baseline test assessing their knowledge of tables. Staff enter the data into a tracking spreadsheet to monitor their progress and identify children for intervention. In Reception and Year 1, children are tested on number bonds and times tables through Big Maths tests and are given key facts to take home and learn each week. The children are encouraged to beat their scores, keep track of their own progress and identify their next target.

Staff are keen to improve their subject knowledge and the Maths Subject Leader takes an active role in disseminating best practice and making recommendations for staff development.

Monitoring and Review:

The coordination and planning of the Maths curriculum are the responsibility of the subject leader, who also:

Supports colleagues in their teaching, by keeping informed about current developments in Maths and by providing a strategic lead and direction for this subject.

Gives the head teacher verbal summary reports in which s/he evaluates the strengths and weaknesses in Maths and indicates areas for further development

Uses specially allocated regular management time to review evidence of the children's work, creating effective planning sequences and to observe Maths lessons across the school.

The school's Monitoring and Assessment calendar clearly identifies regular opportunities for the subject leader to review different aspects of the learning and teaching throughout the school.

The quality of teaching and learning in Maths is monitored and evaluated by the headteacher (alongside the rest of the leadership team) as part of the school's agreed cycle of monitoring and evaluation.

The subject leader alongside key members of staff uses data from informal and statutory assessments in order to feedback into improving school practice.

The Governing Body's Teaching and Learning subcommittee are briefed to oversee the learning and teaching of Maths and where identified the subject leader works alongside them. The Maths Subject Leader also meets with a designated governor to give regular updates on Maths in the school.

Displays:

Displays are important teaching tools and a Maths display should be evident in every classroom. It is important that the displays are used as working walls that reflect the current learning of a topic. The following are considered 'Non-Negotiables' for Maths working walls:

- Target / Learning Objective
- Big Maths Fact
- Mathematical Vocabulary
- Models - Current Learning
- Number line

Teachers are also encouraged to have a 'Problem Solving' area which presents mathematical challenges linked to current learning.