



Barley Fields Primary School

Mathematics Curriculum Policy

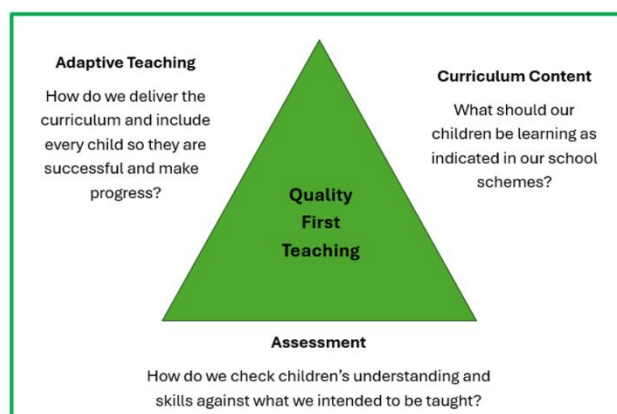
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1. Curriculum Statement

At Barley Fields Primary we have designed our curriculum based on a curriculum model by John Tomsett (2023).

Quality first teaching is the primary function of our school and we use a teaching model that includes an inter-relationship of three pedagogical aspects: **Subject Content, Adaptive Teaching and Effective Assessment.**

Subject content for maths is coherently planned and progressively sequenced for all subjects and meets the statutory requirements of the National Curriculum and more. Differentiated layers of curriculum planning are effective in supporting teaching and learning across the school and teaching resources have been created with a consideration of the foundational knowledge, vocabulary and skills children need to achieve well. Planned lesson content is sequential and extends/builds on previously taught knowledge and skills.



Intent - This is what we want for our children.

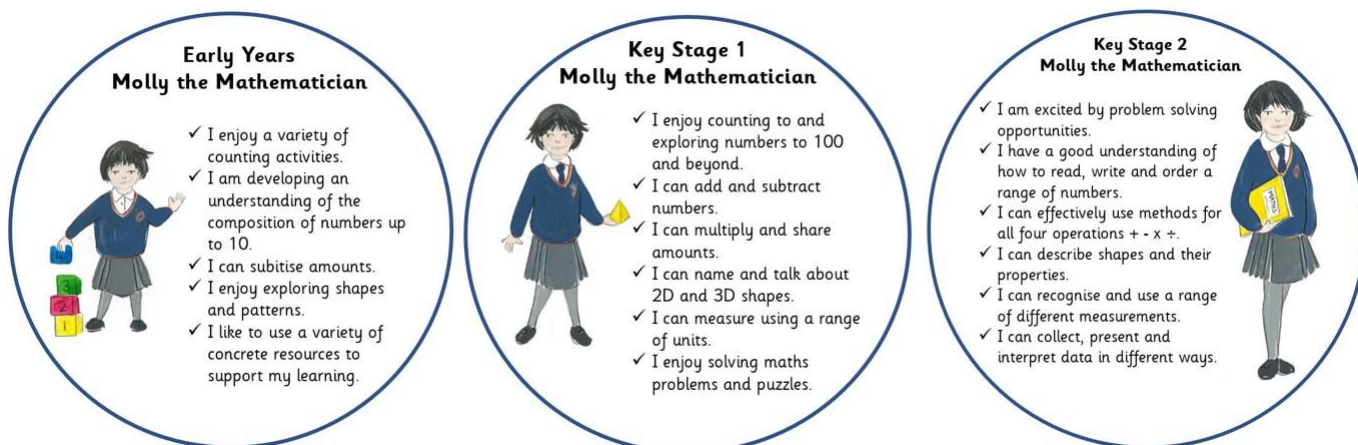
At Barley Fields Primary we recognise that Mathematics is a universal language which helps us to understand the world around us. We aim to help our children understand that Mathematics has implications for important areas of employment such as; physics, architecture, medicine and business. It is also critical to technology and engineering, and necessary for financial literacy and most forms of employment.

We are committed to ensuring that our children become the problem solvers of the future. To do this, they need a solid grounding in Mathematical fluency and regular opportunities to apply these skills creatively to reasoning and problem solving. We want all children to enjoy Mathematics and to experience success in the subject whilst also developing their resilience, in line with our culture of growth mind-set.

We provide a high-quality mathematics curriculum so that all children:

- have fluency in their declarative knowledge;
- attain procedural fluency in a rigorous and progressive way across year groups and key stages;
- engage in regular opportunities to demonstrate conditional knowledge through problem solving activities which allow children to work systematically and logically, choosing the most appropriate method.

Our curriculum characters have been designed to represent the curriculum end points as children progress through school. Our children are regularly exposed to the core skills and knowledge needed to develop as a mathematician with the use of the school curriculum character – Molly the Mathematician. This character is regularly used to encourage children to reflect on the key skills and concept areas of Mathematics.



2. Roles and Responsibilities

Mathematics Leadership

The Mathematics leads in each key stage are responsible for:

- Formulating and updating the Mathematic policy and Calculation Policy when appropriate
- Ensuring staff are aware of the policy's content and that it matches classroom practice as far as possible
- Assisting in the development and review of the curriculum map – long term scheme of learning and medium-term scheme plans.
- Ensuring the Mathematics curriculum is shared, understood and followed by staff.
- Monitoring and evaluating the implementation and impact of the Mathematics curriculum
- Ensuring appropriate resources are available and regularly updating them within the limits of the school budget and according to needs
- Keep up to date with new developments in Mathematics and attending relevant CPD
- Disseminating information, as it is received from any external source, to staff and children
- Encourage other members of staff in their teaching of Mathematics and give support where appropriate
- Ensure that Mathematics maintains a strong profile within the school, through displays etc
- Liaison and partnership working with the PRST Mathematics Working Party

Teachers

- Responsible for planning and delivering the Mathematics curriculum in line with the school long term and medium-term schemes of learning
- Delivering high quality, interactive and adaptive teaching which facilitates children's progress in Mathematics.
- Accurately assessing children's progress and attainment in Mathematics in line with school expectations.

Teaching Pedagogy and Curriculum

Our Mathematics curriculum has been designed to ensure children know more, remember more and can do more as they progress through our school. Our children follow a carefully structured, sequential and small step mathematics curriculum based on, but not exclusive to, that produced by White Rose (we also use 'I see Maths' pedagogy). We continually adapt this curriculum based on the needs of our learners.

To do this, our curriculum;

- breaks down knowledge into smaller components to avoid cognitive overload;
- has built in practise, retrieval and reinforcement of key concepts;
- is progressive so that all teachers know their responsibilities within the overarching development of mathematicians;
- is a promise from one teacher to the next on curriculum coverage;
- is built on research based adaptive teaching methodology;
- has formative assessment at its heart – at Barley Fields, assessment is planning.

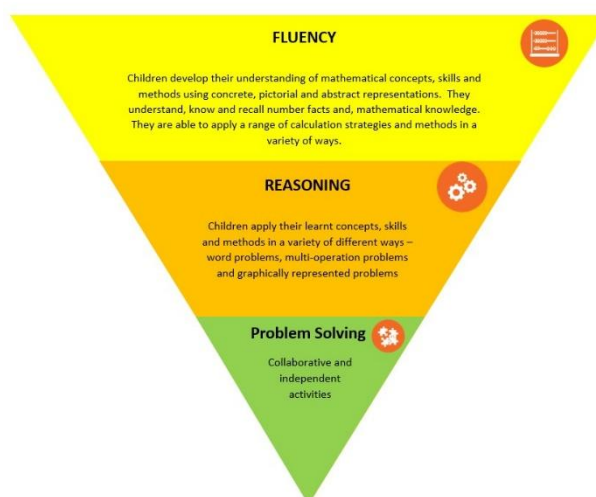
Children should engage in Mathematics daily and the structure of the curriculum promotes regular opportunities to embed declarative knowledge (facts/concepts) and develop procedural fluency (application of methods). We recognise that problem solving is not a generic skill that can be learned out of context. We believe that problem solving is an environment to be nurtured and as such, we provide regular opportunities for children to develop their conditional knowledge through the use of rich mathematical problems.

We aim for our Mathematics curriculum to be current and research informed. As such, it is regularly adapted to meet the needs of all learners and reviewed in response to best practice. We have worked with the EEF and the National College on adaptive teaching in the classroom which underpins all our teaching practice and pedagogy.

3. Our Teaching Approach – Mathematics Pedagogy

Our teaching approach incorporates three key aspects of Mathematics teaching designed to develop our children's effective acquisition and application of skills and knowledge:

- Fluency
- Reasoning
- Problem Solving.



What do we mean by Fluency?

Fluency in mathematics (declarative knowledge) is the bedrock of effective teaching and learning. It encompasses a mixture of efficiency, accuracy and flexibility.

Children will develop an understanding of all mathematical concepts through the CPA approach (concrete, pictorial, abstract). The use of manipulatives will be temporary and used as a 'scaffold' to aid understanding and skill development which can be removed once independence is achieved.

Within our planning structure fluency involves providing children with opportunities to:

1. Become fluent in the fundamentals of mathematics through varied and frequent practice of skills;
2. Recall facts and procedures quickly and efficiently;
3. Develop the flexibility to move between different contexts and representations of mathematics;
4. Recognise relationships, make connections and make appropriate choices from a toolkit of methods, strategies and approaches.

What do we mean by Reasoning?

We recognise that the ability to reason mathematically is the most important factor in a child's success in mathematics. Reasoning in Mathematics is the process of applying logical thinking to a situation to derive the correct strategies for a given question, and using known methods to develop and describe a solution.

Reasoning is seen as the glue that bonds children's' mathematical skills together; it is also seen as bridging the gap between fluency and problem solving, allowing children to use their fluency to accurately solve small step problems. Reasoning activities allow children to apply their learnt skills and conceptual understanding in a variety of different contexts - word problems, multi-operational problems, graphically presented problems, SATs style reasoning problems etc.

What do we mean by Problem Solving?

Ensuring competency in collaborative and independent Problem Solving is at the heart of our mathematics teaching. We recognise that problem-solving cannot be taught - it is an environment, which must be nurtured. If a child already has a readily available method to solve a problem, problem-solving has not occurred.

Problem solving opportunities enable children to find a way to apply knowledge and skills they have to answer unfamiliar types of problems. children to apply their mathematical understanding to a variety of routine and non-routine problems with increasing sophistication and persevere in seeking solutions. In developing problem-solving skills and strategies children will be encouraged to:

1. Use and compare different mathematical approaches.
2. Independently break down problems into a series of simpler steps;
3. Persevere in seeking solutions;
4. Work in logical and structured steps;

5. Work collaboratively with peers;
6. Reflect on, and communicate their problem-solving ideas and strategies to others.

In their approach, teachers purposefully select problem-solving tasks for which children do not have ready-made solutions or to which there is more than one approach and answer. In promoting problem solving teachers use a variety of resources and support children with access to a range of practical equipment. Teachers will need to use effective questioning to enhance learning, acting as a guide on the side and redirect the learning as appropriate. Teachers may need to show and model to children how to interrogate and use their existing knowledge to solve problems.

4. Curriculum Progression

Early Years Foundation Stage

Our Early Years curriculum provides children with the opportunity to acquire skills, understand concepts and gain factual knowledge. This is done through the regular delivery of systematic and clear sequences of learning. Children are always given opportunities to handle a range of manipulatives including Numicon, base 10 and counters. Through our use of the White Rose Curriculum, songs and stories are often used to contextualise maths learning and bring it to life.

Key Stage 1

In KS1 we build upon the concepts and factual knowledge learned in the Early Years whilst also ensuring children build fluency, reasoning and problem-solving skills. We aim for children to have a positive attitude towards mathematics and challenge by promoting a growth mindset.

In KS1, children follow systematic and clear sequences of learning which build upon previous knowledge. We focus on helping children to develop a deep understanding of basic mathematical concepts. We aim to develop children's fluency in key areas such as number bonds, multiplication tables and mental arithmetic, ensuring they can recall and apply facts quickly and accurately. We believe in making mathematics relevant by making real life concepts for learning. Children are given opportunities to apply their mathematical skills to everyday situations, helping them understand how mathematics is used outside the classroom.

Regular formative assessment is used to track each child's progress and identify areas where further support or challenge is needed. Children are provided with physical resources, visual representations and introduced to some abstract methods to ensure deep understanding. Children are encouraged to work independently and collaboratively

Short curriculum summary

Lower Key Stage 2

In LKS2, we build upon children's understanding of basic mathematical concepts, recall and reasoning skills. Our lessons are sequential and build on previous knowledge. Learning is active and we use a variety of engaging resources and hands on activities to make mathematics meaningful. We continue to deepen children's understanding of number, place value and the four operations. We develop children's fluency in key areas such as the ability to recall multiplication tables quickly and accurately so they can apply them in a variety of contexts. We encourage children to work independently and collaboratively in mathematics, in order to develop resilience and perseverance when faced with challenges. Children are encouraged to explore and solve problems using a variety of methods and we begin to develop their ability to think logically, reason mathematically and explain their thinking clearly. Mathematics is made relevant by providing real life contexts for learning. We aim to make mathematics enjoyable and engaging by using a variety of teaching methods and resources, including technology. Regular formative assessment is used to track each child's progress and identify areas where further support or challenge is needed. Children are encouraged to reflect on their own mistakes and take ownership of their mathematical development.

Upper Key Stage 2

In Years 5 and 6 we build on previous year groups by revisiting and building on mathematical concepts whilst also ensuring children build fluency, reasoning and problem-solving skills. We aim for children to have a positive attitude towards mathematics and challenge by promoting a growth mindset.

Children in Year 5 and 6 develop rapid recall of number facts and tables as well as mental and written calculation methods across all four operations. Children are encouraged to consider the most effective way to approach and answer a question. Daily fluency exercises consolidate and extend children's skills.

Children are provided with opportunities to reason with number and mathematical concepts: logical thinking is encouraged, and children explain mathematical concepts and solutions. In addition to this, children are encouraged to use mathematical language to justify, prove and communicate reasoning clearly. Children apply their skills to a range of contexts, including real-life scenarios and other curriculum subjects to demonstrate its real-world relevance. Children are provided with physical tools, visual representations and abstract methods to ensure deep understanding.

5. Assessment

Assessment forms an integral part of teaching and learning in the Mathematics curriculum. This is done formatively as part of the adaptive teaching model in school; observing children engaged in Mathematical teaching and learning, listening and responding to their responses to questions in relation to the expectations set out on our curriculum schemes of learning.

Teachers assess the children's work in both by making informal judgements as they observe them during lessons and by completing summative assessments of their skills gauged against specific end points set out for each year group.

Teachers meet regularly both internally and across the Trust to review individual examples of work against age-related expectations. Summative assessments are reported termly using SONAR for whole school analysis and tracking of pupil progress.

6. Inclusion - Equal Opportunities and SEND

All children will be treated equally and will be given equal access to the Mathematics Curriculum irrespective of gender, ethnic origin, disability, culture or socio-economic background. All children will be treated with respect and spoken to in a positive manner.

The Mathematics curriculum will be adapted according to the needs of the children. If a child needs specialist equipment or software to access the curriculum, the school will, when practically possible, source the appropriate equipment.

If a child has an EHCP plan and is not able to access the curriculum at the same level as his/her peers, then provision will be made for the child to access the curriculum at their own level.

This policy has been written with reference to and in consideration of the school's Disability Equality Scheme. Assessment will include consideration of issues identified by the involvement of disabled children, staff and parents and any information the school holds on disabled children, staff and parents.

7. Resourcing

In school we have a range of concrete teaching resources to scaffold children's conceptual understanding of Mathematics concepts. These resources are centralised in each key stage and in individual classrooms.

We also have online access to a range of teaching and learning Platforms for Mathematics both for teachers and children. Please check with your key stage Mathematics lead for details of these.

8. Monitoring and Evaluation

The monitoring of the standards of children's work and the quality of teaching in Mathematics is the responsibility of Key Stage Leads. To monitor and evaluate the curriculum provision and outcomes in Mathematics the subject leads will:

- Support teachers by explaining the progressive curriculum map, discussing the key concepts and skills in Mathematics, co-planning, team teaching, observing and giving feedback.

- Monitor the delivery of the curriculum against the progression contained in the medium-term schemes of learning.
- Advise the SLT on writing resource provision.
- Work co-operatively with the SENDCo to provide support for children with SEND.
- Discuss regularly with the Head Teacher the progress with implementing this policy in the school.

9. Health and Safety

- Children will be given suitable instruction on the operation of all equipment before being allowed to work with it.
- Children should be strictly supervised in their use of equipment at all times.
- Children should be taught to respect the equipment they are using and to keep it stored safely while not in use.
- Children should be taught to recognise and consider hazards and risks and to take action to control these risks, having followed simple instructions.

10. Policy Monitoring and Review

This policy will be reviewed at least every two years.

Any questions or concerns regarding this policy should be made to the Head Teacher or a member of the Mathematics team.