NEWBOLD SCHOOL
Mathematics Policy

Reviewed March, 2023 by Mrs Crissey and Ms Walls,
Ratified by Newbold School Board of Governors, Oct 2023
Next review: March 2026

1. INTRODUCTION

Mathematics is integral to a great many aspects of everyday life; with this in mind, we endeavour to ensure that children develop a healthy and enthusiastic attitude towards mathematics. Mathematics equips students with skills such as logical reasoning, problem solving and the ability to think in abstract ways.

At Newbold School we follow the latest '2014 National Curriculum' for mathematics and the subsequent Mathematics Guidance, June 2020, which describes what must be taught in each key stage and how to ensure children are ready to progress. This allows continuity and progression in the teaching of mathematics. The foundation stage curriculum is guided by the Early Learning Goals and 'Development Matters', July 2021, guidance.

2. AIMS

2.1 General

Although relating specifically to mathematics, our aims for the subject are also in line with the school's general aims.

We aim to provide the pupils with a mathematics curriculum that will encourage them to be independent, enquiring, literate, numerate, creative and thus, confident learners.

We aim to develop a positive 'I can' attitude to mathematics.

2.2 Specific

EYFS:

Newbold school children who join us in the EYFS, aged 3-5, are encouraged to explore through play, following their own interests and begin to be exposed to mathematical concepts, vocabulary and ideas.

In Early Years, Children Should:

- Understand the importance of mathematics in everyday life.
- Represent numbers using concrete, pictorial and abstract systems.
- Have a sense of the size of a number and where it fits into the number system, within their age and/or ability-related range.
- Use appropriate mathematical language to explain their ideas.
- Know by heart (through practice at school and home) number facts such as counting in sequence, and number bonds to 5 and 10 by the end of EYFS.
- Suggest suitable ways to measure and explore the size of things.
- Develop spatial awareness and an understanding of shapes and their names.

In KS1 and KS2, Children should:

- Understand the importance of mathematics in everyday life.
- Represent calculations and numbers using concrete, pictorial and abstract systems.
- Have a sense of the size of a number and where it fits into the number system, within their age and/or ability-related range.
- Reason mathematically by following an enquiry, making generalisations and proving and justifying findings.
- Make connections in their learning to develop ability to problem solve, applying known mathematics with perseverance.
- Calculate fluently, accurately and efficiently using a range of calculation strategies, including mental strategies.
- Use appropriate language structures to explain their methods and reasoning using correct mathematical terms.
- Know by heart (through practice at school and home) number facts such as number bonds, multiplication tables, doubles and halves and be able to use these facts to solve problems.
- Use a calculator effectively and know when it is appropriate to do so.
- Suggest suitable units for measuring and make sensible estimates of measurements.
- Explain and make predictions from the numbers in graphs, diagrams, charts and tables.
- Develop spatial awareness and an understanding of the properties of 2d and 3d shapes.

3. PROVISION

Pupils are provided with a variety of opportunities to develop and extend their mathematical skills across each phase. In EYFS guidance is taken from Development Matters which states:

'Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding – such as using manipulatives, including small pebbles and tens frames for organising counting – children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.'
(Development Matters Report and Illustrations; p84)

Please also refer to our Early Years Foundation Stage Policy for further details on Early Years' provision.

The expectation is that pupils move through the programme of study at an individual pace with teachers using 'ready to progress' documents to help guide children in their maths journey. Able children deepen their knowledge by applying it to a range of contexts and solving problems with their skills rather than racing through learning at a superficial level. Those struggling are given opportunities to work with scaffolds, including concrete resources, speaking frames and additional reinforcement work to aid understanding.

The New Curriculum forms the basis of what is taught in each key stage, and Herts for Learning mixed age essentials programme outlines the recommended sequence in which these objectives are covered at Newbold to best meet the needs of our mixed age classes. Teachers may make changes and adjustments to this sequence where necessary, with guidance from the mathematics lead, and this is reviewed yearly. In addition, this learning sequence is supplemented to meet the needs of our children including the use of a range of resources, including electronic devices and digital platforms, such as TimeTablesRockStars, kinaesthetic activities, including singing and dancing to aid fundamental fact recall, and paper based activities to practise and explore learning.

Daily lessons are planned based on the Herts for Learning sequences from Reception to Year 6, including a range of activities and a varied approach to fluency. Teachers model new procedures before children have a go themselves; maths learning walls are used to display common procedures the children need to refer back to. Prior learning is recapped regularly through targeted starter activities or through Purple Feedback comments for KS1 and KS2. Progress is monitored using tracking documents either in books or in the shared assessment folder. The teaching of mathematics at Newbold School provides opportunities for:

- Whole class teaching
- Group work
- Paired work
- Individual work.

3.1 Differentiation

Maths at Newbold School is inclusive. Maths tasks offer opportunity to all pupils at an age-related standard. Children may be offered support from teachers, teaching assistants or peers to access work. They may have work scaffolded to support them. For homework at KS2, children may be offered a foundation level workbook, or an advanced level workbook which have appropriate scaffolds and challenges for pupils accessing work independently at home. Teachers ensure all children can access the curriculum by:

- Setting challenging age-related reasoning and problem-solving challenges
- Regular marking and constructive feedback; verbal and written
- Regular formative assessment to determine if pupils are ready to move on
- Regular differentiated homework
- Intervention programmes with a Teaching Assistant or Teacher, as needed: for those children identified with learning gaps, SEND or specific barriers
- Visual prompts for children with language barriers.

3.2 Pupils from Reception to Year 6 engage in:

- Fluency Practice
- Discussion and Reasoning activities
- Problem solving
- Investigations
- Practical work
- The development of mental strategies
- Working with computers
- Consolidation of basic skills and number facts
- Written methods

Manipulatives (i.e. maths equipment) are used at all levels to enhance and assist children's understanding and forming of new concepts. These include:

- Counters and counting objects (with and without 10 frames)
- Numicon
- Bead strings
- Diennes (Base 10 Equipment)
- Multilink (Centi-Cubes in Upper KS2)
- Cuisenaire rods
- Number squares and multiplication squares
- Number lines
- 3D shapes, nets and construction kits

At Newbold School, we recognise the importance of establishing a secure foundation in mental calculation, which requires good recall of number facts. Songs, rote learning and digital games support children's recall of number facts.
Through Herts for Learning, work set for children is challenging, motivating and encourages pupils to talk about their work and the calculation methods they use.

3.3 Cross-curricular links

Mathematics contributes to many subjects and children are given opportunities to apply and use mathematics in real contexts.
Statistics and data analysis cross broadly into subjects such as Science and Geography. Basic calculations and ordering feature in History to calculate dates or place events on a timeline. Measures and angles link strongly to Design and Technology and Art explores pattern making.

3.4 English

Children are taught to explain, justify and reason their thinking using mathematical vocabulary. They use sentence stems to scaffold their mathematical talk and begin to apply this to written explanations in KS2.

3.5 Computing

Children apply and use mathematics in a variety of ways when they solve problems using computers, beginning in KS1. They use spreadsheet and database software to collect and classify data, produce graphs and tables, and interpret and explain their results. Additionally, they interpret angles in programming, and modelling using CAD design which includes knowledge of measures.
Each classroom has an interactive whiteboard which is used to enhance the teaching and learning provision in class.

Children work individually and in pairs on chrome books using education software to reinforce concepts taught.

4. RECORD KEEPING AND ASSESSMENT

Assessment is an integral part of teaching and learning and is a continuous process. It is the responsibility of the class teacher to assess all pupils in their class.

In our school we continually assess our pupils in a formative way through marking work and keeping records of progress against year group criteria. Ongoing, formative assessment is an essential part of the teaching process and is used to target work to the needs of pupils where there may be additional learning needed, thus benefiting the pupils.

Information for assessment is gathered in various ways:

Talking to the children
Observing their work
Marking their work

Additionally, in KS1 and KS2, Medium term assessment is carried out at the end of each term by class teachers. This includes an end of term formal summative assessment, such as Rising Stars Progress in Understanding Mathematics Assessment (PUMA), which is a standardised test and used to monitor progress compared to national averages, and the use of Herts for Learning objectives, which teachers use to assess the children's classwork. The mathematics coordinator analyses the data to track children who are expected and not expected to reach the end of key stage milestone. Where concerns are raised, together, the coordinator and teacher develop units of work to support children who are struggling.

5 ROLE OF CLASS TEACHER

- To plan effectively for mathematics.
- To ensure progression in the acquisition of mathematical skills.
- To keep appropriate on-going records.
- To inform parents of pupils' progress.
- To identify inset needs in mathematics.

6. ROLE OF MATHS COORDINATOR

- To examine long and medium term plans and ensure they are appropriate.
- To support the use of appropriate mathematical strategies.
- Monitor resources.
- Ask about and manage CPD where needed.
- Attend training when needed
- Monitor the progress of children in mathematics across the school
- Communicate findings and areas of concern with the Head Teacher
- Support staff in questions and concerns in mathematics teaching

7. EQUAL OPPORTUNITIES/INCLUSION

We aim to provide effective learning opportunities for all pupils, so that all children have equal access to the curriculum regardless of their gender, race and class.

All planning addresses inclusion issues where relevant.

8. HEALTH AND SAFETY

All staff and pupils are made aware of health and safety issues. (See Health and Safety Policy).

9. PARENTAL INVOLVEMENT

At Newbold School we encourage parents to be involved through:

Inviting parents into school to discuss the progress of their child;

Inviting parents to curriculum evenings;
Inviting parents to maths workshops;
Supporting children with homework;
Sharing learning with home using Tapestry in EYs
Offering opportunities to be on the Board of Governors.

10. References:

2014 National Curriculum
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/425601/PRIMARY_national_curriculum.pdf

2020 Mathematics Guidance
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1017683/Maths_guidance_KS_1_and_2.pdf

Development Matters Report and Illustrations
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1007446/6.7534_DfE_Development_Matters_Report_and_illustrations_web__2_.pdf