



Deepdale Community Primary School Policy for Mathematics



The National Curriculum 2014 states:

“Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history’s most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.”

This policy outlines the intent of our pupils’ mathematical education. It also describes our agreed approach to implementation.

Curriculum Intent

Statement of Intent

At Deepdale Community Primary School, we see every child as a unique individual with the capacity to thrive and be successful. Our school motto of ‘Harmony in Diversity’ underpins a broad and balanced curriculum, which aims to ensure that children leave their primary education as confident, resilient learners with a thirst for knowledge. Our end goal is to teach our children to be mature, curious and eager within the community they are part of. *Anything is possible!* As a result of our ambitious and carefully planned curriculum that meets the needs of all of our pupils, children will continually develop as secure readers with an extensive vocabulary in order that they continue to understand the wider world that they are part of. We encourage problem solving, critical thinking and effective communication across every curriculum subject. By the time our pupils leave their primary phase of education, our valued curriculum will have ensured that they are eager to move on to the next stage of learning; they take pride in their work, can justify their opinions thoughtfully and manage their emotions carefully whilst always taking others in to consideration. At Deepdale Community Primary School, our shared vision is that every child is challenged from their individual starting point onwards. Every child is engaged in their learning and thrives in our continued care.

Curriculum Drivers

At Deepdale Community Primary School, we will all: -

- Celebrate our differences
- Have high aspirations
- Be passionate about the wider curriculum
- Strive to be healthy
- Love language.

Aims of Mathematics

At Deepdale Community Primary School the teaching of Maths is geared towards enabling each child to develop their learning and achieve their full potential. We endeavour to not only develop the mathematics skills and understanding required for later life, but also to foster an enthusiasm and fascination about maths itself. We aim to increase pupil confidence in Maths so they are able to express themselves and their ideas using the language of Maths with assurance. We want the children to see mathematics as being relevant to their world and applicable to everyday life as well as being something that they will need as they move on through their school life and ultimately to the world of employment.

Our aim is to ensure that all children:

- become **fluent**;
- **reason** and **explain** mathematically;
- can **solve problems**;
- understand the maths being taught through the use of visual and practical approaches to teaching;
- develop perseverance in seeking solutions;
- develop an ability to express themselves fluently and talk about Maths with assurance;
- use correct mathematical language and vocabulary;
- develop an appreciation of relationships within mathematics;
- develop mathematical skills and knowledge and quick recall of basic facts;
- have the opportunity to, through repetition and consolidation, rehearse and consolidate; known facts and key skills so that they remain confident and fluent in their calculations.

Aims of Mathematics in relation to the National Curriculum 2014

The National Curriculum for Mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practise with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **reason** mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.
- can **solve problems** by applying their mathematics to a variety of routine and non routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Curriculum Implementation

Principles of Teaching and Learning

At Deepdale Community Primary School, our mathematics curriculum is delivered in a series of blocked units. This allows for depth in the teaching and learning of key concepts and strategies and ensures adequate time for opportunities to reason and problem solve across all areas of the curriculum. Number is prioritised and each year group begins the year by ensuring children have a secure understanding of the place value requirements for their year group. Time is given so that key mathematical procedures can be mastered before knowledge is applied into reasoning and problem solving tasks.

We do however realise, that in order for learning to be embedded and children to retain understanding and 'unconscious competence' in mathematical knowledge, skills and procedures, we have built in many opportunities to revisit previously learned skills and procedures from both the current and previous year groups. This takes place in the form of 'Everyday Maths' which takes place in all year groups outside of the maths lesson each day; starter activities at the beginning of lessons where previous learning is consolidated; weekly arithmetic tests; regular 'low stake' maths quizzes focusing on key topics in Maths and consolidation weeks.

Our expectation is that the majority of pupils will move through the programmes of study at broadly the same pace - a mastery approach. However, decisions about when to progress should always be based on the security of the pupil's understanding. Pupils who grasp concepts rapidly, our 'rapid progressers', should be challenged through being offered problems and challenges that encourage the children to 'dive deeper'. Those children who are not sufficiently fluent with earlier materials should consolidate their understanding, including through additional practice, before moving on. The learning needs of individuals are addressed

through careful scaffolding, skilful questioning and appropriate and rapid intervention, in order to provide the necessary support and challenge. This will include bespoke pre and post teach to individual needs by either a teacher or teaching assistant.

It is important that children fully understand the maths concepts being taught. To that end the school will adopt the 'CPA approach': concrete > pictorial > abstract. This will allow the children to experience the physical aspects of maths before finding a way to present their findings and understandings in a visual form before relying on the abstract numbers. There are manipulatives available in every classroom to help facilitate this process.

Precise mathematical language, couched in full sentences, is always used by teachers and teaching assistants, so that mathematical ideas are conveyed with clarity and precision. Children are required to do the same. For example when talking about fractions, both the part and its relationship to the whole are incorporated into responses: *"The shaded part of the circle is one quarter of the whole circle."*

We use a variety of curriculum resources to support our teaching of the National Curriculum programmes of study including; the Lancashire Maths Planning CD; White Rose Maths Hub scheme of work; Maths No Problem and the NCETM (National Centre for Excellence in the Teaching of Mathematics).

Our calculation polices and Knowledge Organisers detail the methods used to teach calculation and progression in addition, subtraction, multiplication and division.

EYFS

Developing a strong grounding in number we believe is essential so that all children develop the necessary building blocks to excel mathematically. In addition, the curriculum will include rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics. During their time in the foundation stage, children will be provided with frequent and varied opportunities to build and apply their mathematical knowledge. They will participate in small group and whole class maths sessions, as well as experiencing a mathematically rich environment where they can learn through play and exploration and use, apply and consolidate their developing mathematics.

Learning Environment

Each classroom has a maths learning wall which relates to the current maths topic being taught. This is regularly updated to reflect the pace of learning. This can include: key vocabulary; teacher modelling of strategies and processes; visual prompts and prompts and questions to develop reasoning etc.

All classrooms have a number of mathematical, age appropriate manipulatives which are easily accessible.

We also value the importance and necessity of ensuring that all our children become fluent in basic skills and rapid recall facts such as number bonds, timestables, doubling and halving etc. This priority in learning is reflected in displays around the classrooms.

Relationship to other subjects

Where appropriate, secure links are made with other curricular areas to ensure skills are applied across subjects. This begins at the long term planning stage where cross-curricular links are identified. For example, children can apply their statistical knowledge through creating bars and graphs within Geography. (See appendix 1)

Home Learning

Weekly home learning in mathematics will usually consolidate and support classwork. Both Purple Mash, our learning platform, and the school website are used to share tasks and videos that match the learning in class. There will also be a focus on how parents and carers can support in the learning of basic skills and rapid recall

facts. For example, in Year 2 to Year 6 children are encouraged to practise their timestables using Timetable Rockstars on a daily basis. Similarly, Numbots is used to rehearse number bonds. Knowledge Organisers are available to show the key strategies the school adopts when teaching 'number.' These are available on the school website.

In the EYFS half termly newsletters provide ideas for parents on how to practice maths skills in everyday activities for example counting apples into a bag when out shopping. We also have our F.U.N (Families Understanding Maths) activities that parents can do at home with their child.

Curriculum Impact

Assessment, Reporting and Recording

Assessment

At Deepdale Community Primary School we recognise that AFL lies at the heart of promoting learning and in raising standards of attainment. In order to inform planning and to assess children's progress, teachers carry out a range of both summative and formative assessments:

- Using 'prior learning' at the beginning of each unit of work to guide our planning and teaching;
- Using improvement feedback within lessons to encourage children to deepen their understanding, reason mathematically and apply their learning to other contexts. Children's responses are ideal assessment opportunities.
- Regular assessment opportunities such as weekly arithmetic tests; everyday maths; topic quizzes administered away from where the maths topic was taught etc. These 'low stake' tests/quizzes we believe are important in allowing for repetition and consolidation of key skills and known facts.
- Year group termly non-negotiables for mathematics. These expectations are the minimum requirements that each child must meet in order to be judged as working at age related expectations. These are used with children within lessons and to support teacher assessments
- Termly tests from Year 1 to Year 6. These summative tests are used to support teacher assessments and identify areas of maths (individually and as a class) that require further development.

Reporting

At our annual autumn term year group welcome meetings with parents, our year group non-negotiables for mathematics and some of our key calculation strategies are shared. There will be opportunities for progress towards these to be discussed at parent's evenings in the autumn and spring terms. At the end of each academic year, parents receive an annual report which shares the progress towards end of year expectations and effort levels in mathematics.

Recording

At Deepdale Community Primary School all children within KS1 and KS2 have maths books to record most learning and a file for weekly arithmetic tests. Within the Foundation Stage the children have learning journals where examples of the different areas of learning can be found. Practical activities are sometimes evidenced through the use of photographs.

Monitoring and Evaluation

Monitoring of the standards of children's work and of quality of teaching in mathematics is the responsibility of the subject leader supported by the headteacher and link governor. Book scrutinies, with a main focus on pupil progress will be carried out. Pupil interviews are also used regularly as a way of monitoring standards and the quality of teaching in mathematics.

The work of the subject leader also involves supporting colleagues in the teaching of mathematics, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in the school.

At Deepdale Community Primary School subject leaders for Maths hold pupil progress meetings half termly to analyse attainment and progress in mathematics. Any underachievement or lack of progress is discussed and actions put into place.

Review:

This policy was written in September 2015 and will be reviewed in September 2017.

This policy was reviewed in September 2017 and will next be reviewed in September 2019

This policy was reviewed in September 2019 and will next be reviewed in September 2021

This policy was reviewed in September 2021 and will next be reviewed in September 2023

Appendix 1 Cross curricular opportunities

English

Mathematics contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening.

ICT

The effective use of ICT can enhance the teaching and learning of mathematics when used appropriately. When considering its use, we take into account the following points:

- ICT should enhance good mathematics teaching. It should be used in lessons only if it supports good practice in teaching mathematics;
- Any decision about using ICT in a particular lesson or sequence of lessons must be directly related to the teaching and learning expected outcomes for those lessons;
- ICT should be used if the teacher and/or the children can achieve something more effectively with it than without it;
- Useful suggestions as to integrating ICT are given in the ICT section of the Lancashire Interactive Planning tool (National Curriculum 2014).

Science

Almost every scientific investigation or experiment is likely to require one or more of the mathematical skills of classifying, counting, measuring, calculating, estimating and recording in tables and graphs. In Science pupils will for example order numbers, including decimals, calculate simple means and percentages, use negative numbers when taking temperatures, decide whether it is more appropriate to use a line graph or bar chart, and plot, interpret and predict from graphs.

Art, Design and Technology

Measurements are often needed in Art and Design and Technology. Many patterns and constructions are based on spatial ideas and properties of shapes, including symmetry. Designs may need enlarging or reducing, introducing ideas of multiplication and ratio. When food is prepared a great deal of measurement occurs, including working out times and calculating cost; this may not be straightforward if only part of a packet of ingredients has been used.

History, Geography and Religious Education

In History and Geography children will collect data by counting and measuring and make use of measurements of many kinds. The study of maps includes the use of co-ordinates and ideas of angle, direction, position, scale and ratio. The pattern of the days of the week, the calendar and recurring annual festivals all have a mathematical basis. For older children historical ideas require understanding of the passage of time, which can be illustrated on a time line, similar to the number line that they already know.

Physical Education and Music

Athletic activities require measurement of height, distance and time, while ideas of counting, time, symmetry, movement, position and direction are used extensively in music, dance, gymnastics and ball games.