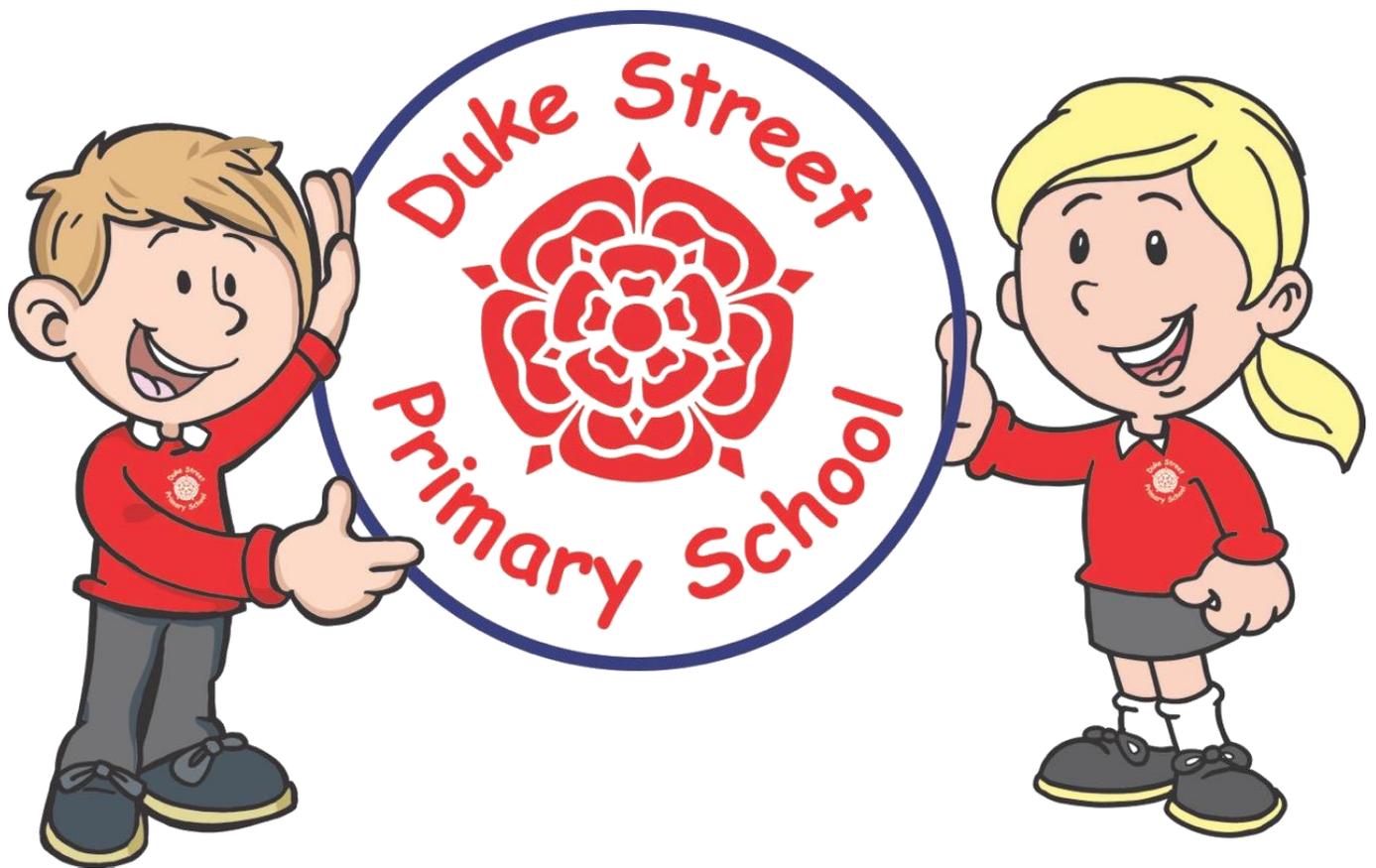


Duke Street Primary School



Mathematics Policy

DUKE STREET PRIMARY SCHOOL MATHEMATICS POLICY

VISION

At Duke Street Primary School, mathematics is fun, engaging and encourages curiosity. Through the ability to reason, solve problems, make links, see patterns and calculate our children make sense of the world around them.

Introduction

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 healthy and enthusiastic attitude towards mathematics that will stay with them.

This policy outlines what we are aiming to achieve in respect of pupils' mathematical education. It also describes our agreed approach to the planning, delivery and assessment of the mathematics' curriculum.

The National Curriculum (2014) for mathematics describes what must be taught in each key stage. The mathematics taught and the methods used reflect both the statutory requirements and the non-statutory guidance and recommendations outlined in the following documents:

- (A) The Early years foundation stage (EYFS) statutory framework (2021)
- (B) The DfE Development Matters (Non-Statutory guidance) (Revised 2021)
- (C) Mathematics Programmes of Study: key stages 1 and 2 National Curriculum in England (July 2014)

This policy provides information and guidance for staff, governors and other interested persons.



Mathematics INTENT, IMPLEMENTATION and IMPACT

INTENT

Children need to develop a mastery of mathematics, efficient mathematical methods and skills. We intend to teach mathematics through:

- A high quality maths curriculum using a mastery approach that has problem solving and reasoning at its core.
- The rigorous development of key aspects of number through regular practice, to develop efficient methods and skills they can use in the real world.
- Developing pupil resilience and independence in problem solving.
- Developing confident mathematicians who are able to understand the world, have the ability to reason mathematically and have an appreciation of the beauty and power of mathematics - preparing them for a successful working life.

IMPLEMENTATION

At Duke Street Primary, our mathematics curriculum is taught through:

Planning

Content - EYFS Statutory Framework 2021 and NC 2014

Planning (long and medium): Lancashire maths planning.

Planning (short term): Daily lessons include a clear learning objective, problem starter, guided learning, independent learning, regular adult/pupil and pupil/pupil interactions, use of mini plenaries/ live marking. Supported by the use of Lancashire planning resources, Red Rose Maths resources, White Rose Maths resources, BBC Numberblocks and NCETM planning support, NCETM Mastering Number Programme Resources, Duke Street Maths Characters, Numbots, TT Rock Stars, Early Bird maths.

Teaching

High quality teaching which offers challenge and fun.

Secure understanding of year group expectations.

Effective deployment of adults, specifically during guided learning, plenaries and intervention.

High expectations of all.

Learning

High quality learning that offers challenge and fun.

Happy, resilient and confident learners.

Children demonstrate our ICARE Core Values and a positive, growth mindset.

Assessment

Summative, Lancashire termly assessment tests, NFER end of year assessments, test base/ past SATS paper, Ready to Progress materials and NCETM resources
Formative - ongoing every day during lessons and after lessons, live marking and feedback.

IMPACT

Tests Mid-year assessments and end of year assessment including EYFS outcomes, SATS (KS1 and KS2) will show good progress is being made.

Pupil Voice will show children are confident, happy and resilient and they talk enthusiastically about maths.

Books will show a pride in maths work, independence, age appropriate content with good progress being made, teacher feedback and interactions during live marking moves learning on and progress groups are in place for those who need additional support to maintain progress.

Lesson observations will show high quality teaching, rich vocabulary, active learning and active assessment by all adults.



Aims

The new National Curriculum is written with three core aims:
Fluency, Reasoning and Problem Solving.

The national curriculum for mathematics aims to ensure that all pupils:

- Become **fluent** in the fundamentals of mathematics, including through varied and frequent practice 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.

Mathematics helps children to make sense of the world around them through developing their ability to calculate, to reason and to solve problems. It enables children to understand and appreciate relationships and pattern in both number and space in their everyday lives. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics.

At Duke Street Primary School we aim to:

- develop a positive attitude to mathematics as an interesting and attractive subject in which all children gain success and pleasure;
- develop mathematical understanding through systematic direct teaching of appropriate learning objectives;
- encourage the effective use of mathematics as a tool in a wide range of activities within school and, subsequently, adult life;
- develop an ability in the children to express themselves fluently, to talk about the subject with assurance, using correct mathematical language and vocabulary;
- develop an appreciation of relationships within mathematics;
- develop ability to think clearly and logically with independence of thought and flexibility of mind;
- develop an appreciation of creative aspects of mathematics and awareness of its aesthetic appeal;
- develop mathematical skills and knowledge and quick recall of basic facts

Teaching and Learning Style

The school uses a variety of teaching approaches to cater for the different learning styles of pupils in mathematics lessons. Our principle aim is to develop children's knowledge, skills and understanding in mathematics. We do this through our developing approach to teaching for mastery. All pupils have access to a daily lesson that has a high proportion of whole-class teaching and guided learning where pupils are active participants. During these lessons we encourage children to ask as well as answer mathematical questions. Peer discussion is a regular feature. They have the opportunity to use and view a wide range of resources and visual images to support their understanding of mathematical concepts. Children use ICT in mathematics lessons where it will enhance their learning, as in modelling ideas and methods. Online resources provide competition and support specific key skills in school and at home.

Although the programmes of study of the National Curriculum (2014) are organised into distinct domains we believe as the National Curriculum states 'that pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasing sophisticated problems' (DFE, 2014) With this at the forefront of our teaching we ensure that reasoning and problem solving is a key

aspect of every maths lesson and is further promoted through termly designated problem solving weeks.

In all classes, there are children of differing mathematical ability. We recognise this fact, and provide suitable learning opportunities for all children by matching the support needed and challenge of the task to the ability of the child without putting a limit on what they can achieve during the lesson. We achieve this through a range of strategies - through differentiated questioning, mixed ability pairings, challenges, additional adult clarity and questioning whilst also developing their independence.

We use teaching assistants to provide appropriate support to individuals or to groups of pupils. Teaching assistants within Duke Street Primary School are viewed as an important 'asset' to the school and, as such, are fully involved within the daily mathematics lesson. Their knowledge, skills and understanding are constantly updated through discussions with class teachers and involvement in school-based and LA led Inset. Throughout the lesson, all adults will circulate, support, question and clarify. This method allows all staff to provide the maximum amount of scaffolding and support to the children who need it so that they can then continue with the lesson with further independence. This allows for misconceptions and errors to be quickly spotted and addressed

The Foundation Stage

Work undertaken within the Foundation Stage is guided by the requirements and recommendations set out in the Statutory Framework for the EYFS (2021) and the Development Matters in the EYFS (2021). In Early Years, Mathematics involves providing children with opportunities to develop and improve their skills in the six key areas of early maths: cardinality and counting, comparison, composition, pattern, shape and space and measures. All areas of the provision have mathematical activities for the children to access as well as daily focused maths sessions. We prioritise the teaching of Number ensuring there are regular opportunities to strength and deepen understanding. The long term plan and medium term plan structures coverage to allow for progression. Additional teaching of number using the Mastering Number Programme developed by the National Centre for Excellence in the Teaching of Mathematics (NCETM) takes place in an additional short session daily We give all the children ample opportunity to develop their understanding of mathematics throughout the day. We aim to do this through varied activities that allow them to use, enjoy, explore, practise and talk confidently about mathematics both inside and outside the classroom.

Key Stage 1&2 Mathematics Curriculum Planning

Mathematics is a core subject in the National Curriculum, and we use the Mathematics Programmes of Study: key stages 1 and 2 National Curriculum in England (2014) and the Mathematics planning support from Lancashire County Council (LCC) as the basis for implementing the statutory requirements of the programme of study for mathematics.

We carry out the curriculum planning in mathematics in line with the structures and recommendations outlined in the LCC long term planning documentation and sequence of learning. Our weekly plans list the specific learning objectives for each lesson and give details of how the lessons are to be taught.

In Key stage 1 & 2, the day is started with Early Bird Maths. Early Bird Maths provides daily challenge in fluency and efficient mathematical methods.

We use the Red Rose Mastery scheme and White Rose planning documents to support our teaching throughout key stage 1 and 2.

In key stage 1 there is an additional Mastering Number Programme daily following the NCETM programme.

The headteacher and mathematics subject leader are responsible for monitoring the mathematics planning within our school.

Assessment

Assessment has two main purposes:

- assessment of learning (also known as summative assessment);
- assessment for learning (also known as formative assessment).

Assessment of learning (AoL) - summative assessment

Assessment of learning is any assessment that summarises where learners are at a given point in time - it provides a snapshot of what has been learned. Within Duke Street Primary School AoL is used appropriately. This is completed using teacher assessed judgements of the children's depth of understanding and summative testing using new optional and statutory testing. The outcomes are used by teaching staff to identify gaps in knowledge and plan intervention.

Assessment for learning (AfL) – formative assessment

“Assessment for learning is the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to get to and how best to get there.”

Assessment Reform Group, 2002

At Duke Street Primary School we recognise that AfL lies at the heart of promoting learning and in raising standards of attainment. We further recognise that effective AfL depends crucially on actually using the information gained.

The school supports teacher assessment through the use of

- The Ready to Progress documents produced by the NCETM
- Lancashire Learning and Progression Statements (LAPs) documents
- Our own progression document that outlines progression from Reception to Year 6.

These provide a breakdown of the National Curriculum expectations for each year group and help teachers to assess children's capabilities and plan their next steps.

The assessment procedures within our school encompass:

- Making ongoing assessments and responding appropriately to pupils during 'day-to-day' teaching. This live marking and feedback allows for errors to be addressed swiftly.
- Daily follow up progress groups for those requiring further clarity and support, led by class teachers.
- Using knowledge of pupils drawn from ongoing pupil tracking records and the progression document to inform 'prior learning' at the beginning of each unit of work to guide our planning and teaching;
- Adjusting planning and teaching within units in response to pupils' performance;
- Use of the 'assessment for learning' questions to check learning against the end of year objectives.
- Use of ongoing teacher assessment and the Ready to Progress Criteria to identify gaps in attainment on a half termly basis and at the end of each full term. This information informs subsequent teaching and required intervention.
- Use of information gained from statutory and optional tests. Information gained is used by teachers to support planning and identify key children with gaps. This information also feeds into additional support or intervention that may be required.

Contribution of Mathematics to Teaching in Other Curriculum Areas

English

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

Computing

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

- Computing should enhance good mathematics teaching. It should be used in lessons only if it supports good practice in teaching mathematics;
- Any decision about using computing in a particular lesson or sequence of lessons must be directly related to the teaching and learning objectives for those lessons;
- Computing should be used if the teacher and/or the children can achieve something more effectively with it than without it;

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.

Personal, Social and Health Education (PSHE) and Citizenship

Mathematics contributes to the teaching of personal, social and health education, and citizenship. The work that children do outside their normal lessons encourages independent study and helps them to become increasingly responsible for their own learning. The planned activities that children do within the classroom encourage them to work together and respect each other's views.

Teaching Mathematics to Children with Special Educational Needs and Disabilities

At Duke Street Primary School, we aim to provide a broad and balanced education to all pupils. Quality First Teaching is considered an entitlement for all pupils. Effective pupil tracking enables identification of pupils who may benefit from early 'intervention' at an appropriate level.

We also recognise, and aim to make provision for, pupils who have a particular ability in mathematics.

Resources

There is a range of resources to support the teaching of mathematics across the school. Staff are encouraged to use practical and visual models to support children's learning in mathematics. All classrooms have a wide range of appropriate practical apparatus. Apparatus is made available to the children through the use of table top maths boxes. A range of audio visual aids are also available and a range of software is available to support mathematics work. Children should be encouraged to use whatever resources are available to them in the classroom and which they feel would be beneficial to help them when completing Maths work.

Learning environment

Teachers promote a stimulating and enriched learning environment where children feel safe to take risks, learn from their mistakes and understand that hard work and effort make a difference. In every classroom, we have a maths working wall which facilitates learning. Vocabulary and modelling of different methods are displayed on there. In order to further promote independence, staff provide resource scaffolds on the working wall so that the children can use them to support their learning. To encourage a growth mindset, mistakes are used to further learning in a positive, supportive way. Classroom displays contain a 'Marvellous Mistakes' section that look at common misconceptions and errors to further learning. In Foundation Stage, there is a Mathematics area that is set up by the class teacher and the children decide on which resources and tasks they would like to complete.

Responses to Children's Work

We recognise the importance of responding to children's work, whether orally or in writing. We seek to encourage children by acknowledging positive achievements and praising children for their effort. This could include praise for use of a viable method even if the end results were incorrect. Children are frequently provided with next steps to support and enhance their understanding and make links between previous and future learning. These next steps can be given orally during live marking and feedback, in the form of daily 'challenges' to deepen learning and through progress groups. Children are given opportunities, and are actively encouraged, to explain their work to others. They are encouraged to value and respect the work of others. (see Marking and Feedback Policy)

Monitoring and Review

Monitoring of the standards of children's work and of quality of teaching in mathematics is the responsibility of the headteacher and link governor supported by the subject leader.

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.

Policy Reviewed and Amended: February 2022

This policy will be reviewed at least every two years or sooner if necessary.

The school contact for Mathematics is Mrs Ridley