



Clitheroe St James' C of E Primary School

Mathematics Policy

UPDATED SEPT 2024
J LEEMING AND S SHARP

CLITHEROE ST JAMES' C OF E PRIMARY SCHOOL MATHEMATICS POLICY

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 (2013) 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.

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

VISION FOR MATHEMATICS

We see mathematics as integral to all aspects of life, with this in mind we endeavour to ensure that our children at St James' develop a healthy and enthusiastic attitude towards mathematics and see its importance in their own lives, their future and in the world around them.

At St James' Mathematics is a subject that all children can learn and enjoy.

We believe our children can be confident mathematicians, well equipped with skills to calculate, to reason and to solve problems and be resilient learners, seeing any mistake as opportunity to learn and improve.

Aims

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 Clitheroe St James' C of E Primary School we aim to:

- develop a positive attitude to mathematics as an interesting and attractive subject in which all children gain some 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

At Clitheroe St James' C of E Primary School, we aim to ensure that lessons are engaging and challenging, drawing upon a wide range of teaching styles and strategies in order to cater for individual learners. We are on a 3 year journey with the North West Maths Mastery Working Group and as such we are working with other schools across the North West to further develop our mathematics teaching and learning.

In lessons you will see examples of whole class teaching in line with the principles outlined in the 'Essence of teaching for Mastery' document published by the NCETM. Lessons will be vibrant and enjoyable, with teachers using a range of resources including models and images to develop children's mathematics within a concrete, pictorial, abstract approach. Children will be highly engaged and challenged through discussion and mathematical talk, utilising skills of reasoning and explanation alongside accurate use of mathematical vocabulary. We follow a clear policy for written and mental calculations that is in line with the National Curriculum and this includes the use of practical resources to aid understanding at every stage. Teaching assistants intervene as needed to identify misconceptions and ensure progress. Each class are taught the objectives set out for their year. In Y1-6 the medium-term plans set out by The White Rose Maths Hub are followed and adapted according to needs of pupils. These are supplemented with other resources such as Nrich, NCETM, Deeper Learning Materials etc.

Foundation Stage follows Red Rose Maths. We provide children with opportunities to develop and improve their skills in counting, understanding and using numbers and calculating simple addition and subtraction problems. Children are also given opportunities to explore and describe shape, space and measures. Learning takes place through a variety of well-planned experiences and children are encouraged to use and apply mathematical knowledge and

vocabulary through practical and challenging activities. A mixture of whole class, group and independent learning opportunities are provided each day and the rich learning environment supports development in children's mathematical understanding. Maths is taught in line with the EYFS framework and early learning goals. Teachers also use the non-negotiables and school calculation policy to ensure consistency and progress. Baseline assessment takes place in the Autumn term and following this, on-going teacher assessments are made.

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This involves working with numerals, words and the four operations, and includes practical resources such as base ten, Numicon and real-life objects. Pupils develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching involves using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money. By the end of year 2, we aim for all pupils to recall the number bonds and related addition and subtraction facts to 20 and be precise in using and understanding place value. Mathematical vocabulary is taught within lessons, and children are encouraged to use vocabulary precisely to explain their mathematical reasoning.

The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils to become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This ensures that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. We follow a clear written calculations policy to ensure consistency throughout the school. At this stage, pupils develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching ensures that pupils use mathematical knowledge with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. Children are given opportunities to use measuring instruments with accuracy and make connections between measure and number. By the end of year 4, we aim for pupils to have memorised their multiplication tables up to and including the 12 times table and show precision and fluency in their work. Mathematical vocabulary is taught within lessons, and children are encouraged to be precise in the use of vocabulary to explain their mathematical reasoning.

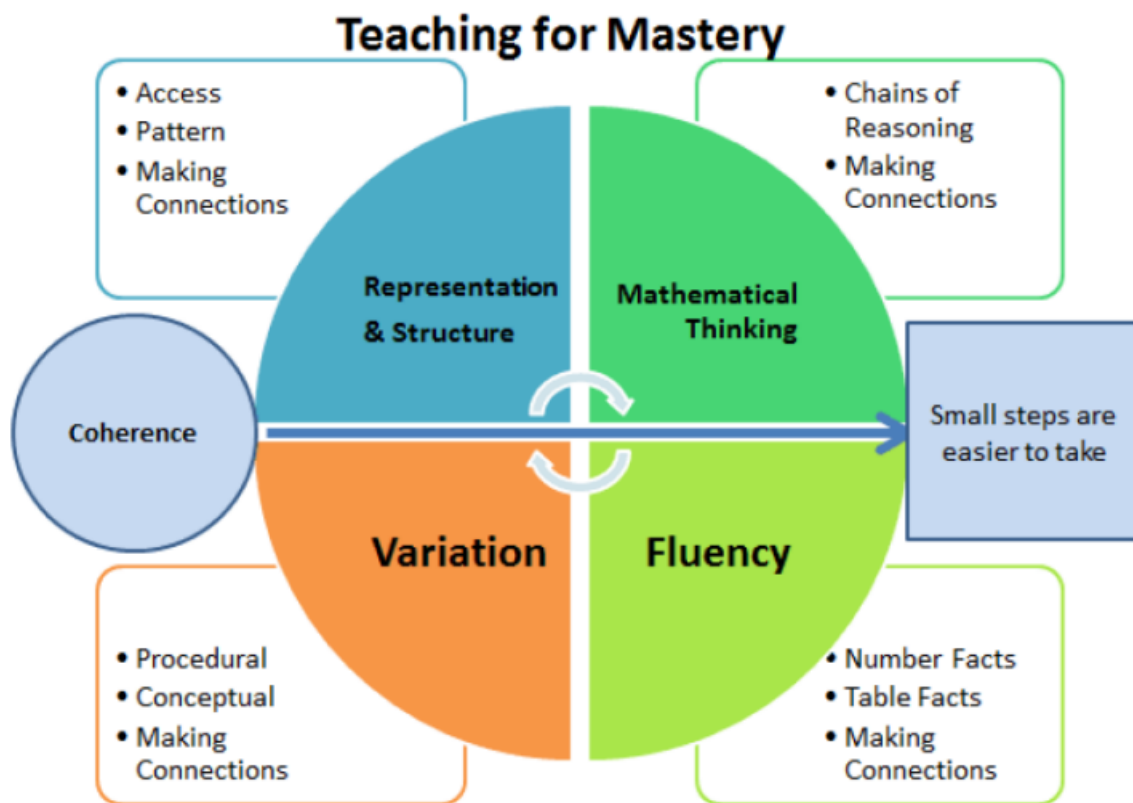
The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers and decimal fractions. This develops the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio. At this stage, pupils develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures consolidates and extends knowledge developed in number. Teaching ensures that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them. By the end of year 6, we aim for all pupils to be fluent

in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Maths is visually evident in each class with a dynamic working wall that is used on a daily basis to enrich, add to, support and lead the learning of Maths. Teachers ensure that the Working Wall is up to date and includes all of the tools needed for the subject.

In line with our BOLD vision for the curriculum, we have a “Growth Mindset” culture inculcating a sense of self-belief in pupils. We also highlight errors as important learning opportunities and instil the belief that mistakes lead to success.

We incorporate *The 5 Big Ideas* of Mastery into our approach in the subject and teachers reference them on a daily basis:



We also reference the “8 Classroom Norms in the subject”.

8 Classroom Norms to Establish in Mathematics

1. Everyone can learn mathematics to the highest levels.
2. If you 'can't do it', you 'can't do it yet'.
3. Mistakes are valuable.
4. Questions are important.
5. Mathematics is about creativity and problem solving.
6. Mathematics is about making connections and communicating what we think.
7. Depth is much more important than speed.
8. Maths lessons are about learning, not performing.

Stem Sentences and Diagnostic Questions (<https://diagnosticquestions.com/>) are also used in our daily lessons. This technique enables the teacher to provide a sentence stem for children to communicate their ideas with mathematical precision and clarity. These sentence structures often express key conceptual ideas or generalities and provide a framework to embed conceptual knowledge and build understanding.

Mathematics Curriculum Planning

Years 1-6 at Clitheroe St James' C of E Primary School use WRM to plan their own units giving careful consideration to the sequence of mathematical teaching points and integrated UAM and problem solving. Teachers use a range of supporting documents and resources such as materials from NCETM to supplement their planning. Foundation Stage use Red Rose Maths.

Adaptive teaching strategies are in place in each class. Learning is closely matched to children's needs. When planning, staff consider what scaffolding is required to support lower prior attainers and also effective and appropriate challenges for higher prior attainers and rapid graspers eg Nrich/NCETM/ISee reasoning/Deeper Learning Materials etc.

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 Clitheroe St James' C of E

Primary School AoL is used appropriately, e.g. to provide a Teacher Assessment level and grade. Pupils have a test termly and progress data is tracked.

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 Clitheroe St James' C of E 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 using the information gained.

The assessment procedures within our school encompass:

- Making ongoing assessments and responding appropriately to pupils during 'day-to-day' teaching. These 'immediate' responses are mainly verbal and are not normally recorded;
- 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 information gained from statutory and optional tests. Analysis is done at both a quantitative and qualitative level. Information gained is used to set focused curricular targets (what to teach) and also to determine which strategies or methods are particularly effective in respect of specific areas of mathematics (the how and why).

Contribution in Mathematics to Teaching in Other Curriculum Areas

At Clitheroe St James C of E Primary school we encourage creative learning opportunities and outcomes for mathematics across other subjects.

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 objectives for those lessons;
- ICT 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 Needs

At Clitheroe St James' C of E 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. This may be in small groups, 1 to 1 or may include teachers sending additional work home to be completed.

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

Resources

Manipulatives in all classes are used by children alongside teacher modelling where appropriate. This part of our concrete, pictorial and abstract CPA approach. Manipulatives are particularly useful when learning is new. Children are given the opportunity to select the appropriate manipulative to support their own learning. Staff are confident in selecting appropriate manipulatives to support learning. Children's attitudes towards use of manipulatives is positive and they are seen as a tool to support learning for all children.

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. 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. Children are given opportunities, and actively encouraged, to explain their work to others and to display their work when it seems appropriate. They are encouraged to value and respect the work of others.

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.

Updated Sept 2024

J Leeming and S Sharp