FULFEN Primary School

Leading the way to a brighter future

Love of Learning... Encouraging... Adaptable... Determination...

Mathematics Policy

Date Written: January 2024

Review Date: January 2025

Curriculum Aims

Fulfen Primary School adopts best practice from a range of research, resources and educational thinking to improve outcomes for all our children. We believe that the teaching of Mathematics at Fulfen achieves this purpose by enabling children to become passionate and critical thinking mathematicians who are developing their understanding of Maths in their lives and the wider world. This vision embodies all that we do with Maths at Fulfen and allows all to discover that Maths is an integral part of everyday routine; bringing the abstract world to life. The Maths a child discovers at Fulfen Primary School will form the building blocks for future learning, used throughout their lives.

Our aim is that children leave Fulfen fluent and methodical in procedural and conceptual aspects of Mathematics, the confidence to bravely and flexibly problem solve and the knowledge and understanding to reason and justify using precise vocabulary; enabling them to flourish in society and therefore widening their future opportunities. Most importantly, we aim for all children at Fulfen to become curious mathematicians who share their love of learning with all they encounter. Together, we will nurture our children to LEAD the way to a brighter future.

Curriculum Organisation and Planning

Fulfen's curriculum is planned and delivered by the class teacher through differentiated whole class teaching. This is to enable all children to experience appropriate challenge. Teachers identify the pupils' strengths and misconceptions and act on this to:

- Plan future lessons and teaching.
- Remedy where pupils do not demonstrate knowledge or understanding of a key element of the curriculum.
- Deepen the knowledge and understanding of the most able.

At Fulfen, we have developed a curriculum that best implements our intent for Mathematics, whilst encompassing the Primary National Curriculum objectives. Taking the National Curriculum into account, we have developed domains in Mathematics which children will regularly encounter throughout not only primary school but throughout their lives.

Domains	**Key Concepts**
Number	Place value, ordering, comparing, number system, multiples, digits, compare, partition, expanded form, Roman numerals, negative numbers, estimate, rounding, value.
Four Operations	Add, subtract, multiply, divide, times tables, mental calculations, column methods, sum, difference, doubles, inverse, estimate take away, difference, part-whole, bar model, multiples, factors, product, common factors, common multiples, HCF, HCM, divisor, quotient, short division, long division, sharing, grouping, lots of,

	inverse, remainder, column multiplication, exchange, commutative law, distributive law, prime numbers, square numbers, cube numbers, composite numbers, order of operations.
Money	Pounds, pence, converting between pounds and pence, add, subtract, change, coins, ordering, estimating.
Time	Days, weeks, months, years, leap years, hours, minutes, seconds, 12-hour clock, 24-hour clock, comparing, ordering, o'clock, am/pm, morning, afternoon, noon, midnight, analogue/digital clock, convert.
Measurement	Lengths (km/m/cm/mm), mass (kg/g), volume (l/ml), imperial units (inches/pounds/pints), money (pound/pence), convert, estimate, compare, units squared, units cubed.
Geometry	Angles, acute, obtuse, reflex, right angles, horizontal, vertical, parallel, perpendicular, 2D shapes, 3D shapes, symmetry, face, edge, vertices, prism, sphere, cone, cubes, cuboids, cylinders, pyramids, polygons, square, rectangle, triangle, pentagon, hexagon, rhombus, parallelogram, trapezium, quadrilateral, irregular, regular, scalene, equilateral, isosceles, area, perimeter, degrees, angles on a straight line, angles around a point, interior angles, nets.
Position and Direction	Coordinates, grid, x-axis, y-axis, left, right, up, down, corresponding vertices, translation, quadrants, reflection, coordinate plane.

Aims:

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 simper steps and persevering in seeking solutions.

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The mathematics programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems.

At Fulfen, we challenge pupils to strive to work towards nine end points. It is our intention that our children will leave Fulfen as inspired Mathematicians who have achieved the following:

1. For children to achieve fluency in the mathematical facts and calculation strategies required for mathematical competency and confidence in adulthood.

2. For children to be able to reason and justify using a range of mathematical vocabulary to help to understand the world around them.

3. For children to confidently solve a range of problems using real life contexts, making links across concepts in Mathematics – through deliberate practice, exposure to pattern and mathematical structure.

4. For children to confidently use mathematical resources and equipment.

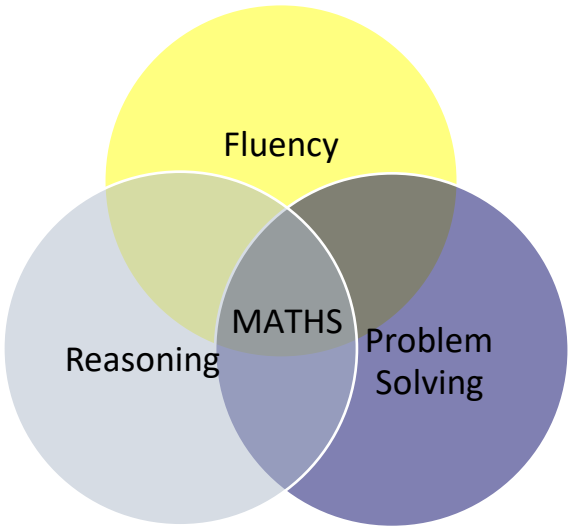
5. For children to have statistical competency whereby they are able to make reasonable decisions that are based on information provided. Their ability to use their knowledge of fractions, decimals and percentages will further enable them to have confidence in the decisions they are making.

6. For children to understand the importance of position and direction and its application to how this can support them in later life.

7. For children to be able to use a range of metric and imperial measures.

8. For children to make precise estimations whereby they are able to become resourceful and reflective and use such skills to support their own financial stability.

9. For children to have a developed understanding of number sense and place value – which underpins all mathematical concepts - enabling them to understand equivalent representations of the same number.



Provision:

In Reception, the children have a weekly Maths focus which is based on the objectives taken from the Early Years Foundation Stage Framework. Every child in Reception receives a weekly teacher led group session, alongside their daily discrete whole class teaching which takes place four times a week. Following this, targeted support, where necessary, is provided in small groups or on an individual basis, if required, within both indoor and outdoor provision. Mathematics lessons are taught daily to all children in KS1 and KS2. One lesson per week is solely focussed on arithmetic skills. For all lessons, the children are taught in their year group and are of mixed ability. Maths lessons are engaging and challenging and children work independently, in pairs or in groups at different stages of the lesson. Children are encouraged to discuss their understanding and verbally justify their answers, as well as work silently on their own work. Children use technology to support their learning.

Maths lessons are planned over a number of weeks using Power Maths and White Rose Maths resources to create mid-term plans. This enables teachers and teaching assistants to support all children in meeting both national curriculum objectives and Fulfen Primary Schools End Points for Mathematics. We are part of the NCETM Mastering Number programme and this is used in Reception, Year 1 and Year 2.

In addition to the daily mathematics lesson, children have 'morning maths' time, two to three times per week. This is the opportunity for children to practise the basic mathematics skills required to become fluent in calculation, times tables, number bonds, doubling etc. During this time, children work independently on practise tasks. This time can also be used for children, who are at risk of not meeting the age-related expectations, to look ahead to the following day or week's area of work. The teacher is able to work with groups of children to begin to pre-teaching with the intention of closing the gap, before they take part in the next day or week's maths lessons. Post-assessments are completed to document continual progress.

Problem solving and reasoning occurs throughout mathematics lessons, whether it is during the mental/oral starter, main focus of the lesson or during the plenary. Regular opportunities for reasoning are a focused part of weekly maths lessons and children are continuously asked to justify and verbalise their thoughts and understanding.

Fulfen provision for pupils with SEN is coordinated by the SENDCo in response to the results of diagnostic assessments carried out by staff in school or from outside agencies. Personal Learning Plans are devised by the class teacher in liaison with the SENDCo. Children are provided with tailored learning support packs to use alongside additional concrete resources provided during mathematics lessons.

Recording:

In EYFS, adult-led work is recorded in Class Stories. When children independently access the Maths table and complete retrieval activities, this work is documented.

All children in KS1 and KS2 have one maths book for the Mathematics Curriculum, and a morning maths book, but are expected to apply their skills to other areas of the curriculum in their foundation subject books when appropriate. Cross curricular links and STEM links are clearly denoted on Mid Term plans.

All books and SeeSaw tasks are regularly checked by SLT and the Mathematics leader during Subject Surgeries to ensure the correct pitch, expectations, marking policy and presentation are being adhered to. Subject surgeries provide an opportunity for open discussion, training and internal moderation.

Planning:

At Fulfen we use Power Maths and White Rose long term plans as a foundation. From these, teachers create Mid Term plans which not only incorporate coverage of the national curriculum objectives but also ensure all are provided with the opportunity to work towards End Points which go above and beyond the national curriculum objectives; covering key vocabulary, STEAM (Science, Technology, Engineering, Arts, Mathematics) links and cross curricular coverage. Every lesson will start with a 'Sticky Starter' activity. This retrieval task encourages children to draw information from the long-term memory, encouraging the reinforcement of developing schema and an opportunity for the children to apply previously learnt knowledge. All 'Sticky Starter' activities ask children to retrieve Mathematical knowledge from yesterday's, last week's, last month's and last year's learning.

All lessons should be accessible to all children, differentiating resources and offering scaffolding or support where required. Teachers use the calculation policy to plan for progressive written methods for calculation.

Maths Domains of the 2014 Curriculum by Year Group

*Staff **must** cover all of these in a year, but can also revisit different areas to link with foundation subjects and current news/ topics etc.*

Year 1	Year 2	Year 3	Year 4 (Building on Y3)	Year 5 (Building on Y4)	Year 6 (Building on Y5)
Number and place value	Number and place value	Number and place value	Number and place value	Number and place value	Number and place value
Addition and Subtraction	Addition and Subtraction	Addition and Subtraction	Addition and Subtraction	Addition and Subtraction	Addition, Subtraction, multiplication and division.
Multiplication and Division	Multiplication and Division	Multiplication and Division	Multiplication and Division	Multiplication and Division	Fractions including decimals and percentages

Fractions	Fractions	Fractions	Fractions including decimals	Fractions including decimals and percentages	Ratio and Proportion
Measurement	Measurement	Measurement	Measurement	Measurement	Measurement
Properties of shapes	Properties of shapes	Properties of shapes	Properties of shapes	Properties of shapes	Properties of shapes
Position and direction.	Position and direction	Position and direction	Position and direction	Position and direction	Position and direction
	Statistics	Statistics	Statistics	Statistics	Statistics
					Algebra

We use the Power Maths and White Rose Whole School Progression Map to ensure coverage of all objectives throughout the whole school.

Resources:

A variety of resources are available in school. These include children's manipulatives, teachers' resources, books and access to TV/radio/online programmes. Resources are shared between all staff, including visiting students. Many daily resources are divided between year groups but are available to share throughout the whole school. Other less frequently used resources are stored in the Maths cupboard and teaching staff are encouraged to access these to support the progress of all pupils.

Each classroom has a Maths progress wall. This is for children to use, and for staff model methods and share good examples of work. It should be changed when a new area of maths is taught. Personalised progress packs are stored in each classroom and are specific to whole school, KS1 or KS2. They supplied for any pupil who may require them. We aim to promote a passion for Mathematics throughout the whole school.

The Maths leader is responsible for maintaining resources, monitoring their use and organise storage. Staff submit resource requests to the leader, as well as notifying them of any damaged stock. Resource purchasing is in accordance with normal school procedures and is based upon the school budget.

Early Years Foundation Stage:

Maths in Early Years is based upon the Foundation Stage Profile for:

- Number
- Numerical Patterns

Number and numerical patterns depend on learning and being competent in a range of key skills, together with having the confidence, opportunity, encouragement, support and disposition to use them. Mathematical skills are embedded in the daily routine within Preschool & Reception. This can include: registration, snack, tidy up and transition times.

By the end of Reception, children are expected to reach the Early Learning Goal in both number and numerical patterns.

Number Early Learning Goal:

Children at the expected level of development will:
• Have a deep understanding of number to 10, including the composition of each number;
• Subitise (recognise quantities without counting) up to 5;
• Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Numerical Patterns Early Learning Goal:

Children at the expected level of development will:
• Verbally count beyond 20, recognising the pattern of the counting system;
• Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
• Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

As part of Fulfen's Reception Mathematics curriculum, children will be taught to use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. They recognise, create and describe patterns. They explore characteristics of everyday objects and shapes and use mathematical language to describe them.

To give all children the best opportunities for effective development and learning in number, numerical patterns and shape, space and measures, practitioners should give particular attention to:

- Providing opportunities for children to communicate thoughts, ideas and feelings and build up relationships with adults and each other;
- Teach discreet sessions on number, numerical patterns and shape, space and measure, but also encourage children to use and apply their skills and knowledge in a range of areas;
- Planning an environment that reflects the importance of mathematics through signs, notices, and real-life examples;
- Providing opportunities for children to see adults counting and using maths and for children to experiment with mathematics for themselves through recording and using a range of equipment.
- Providing time and opportunities to develop spoken language through conversations between children and adults, both one-to- one and in small groups, with particular awareness of, and sensitivity to, the needs of children for whom English is an additional language, using their home language when appropriate.

Use of Technology

iPads are used in lessons as a tool to assist with learning and to make tasks more efficient or more effective. Pupils can creatively apply what they have learnt to enable them to know and remember more as well as develop critical thinking and creative skills. Technology is used to capture pupils' imagination; support learning by removing the cognitive load; deepen understanding or scaffold learning within a lesson. Technology is used in Mathematics to:

- bridge the gap between concrete, pictorial and abstract work,
- quick games to build fluency and skills,
- using annotated photographs of resources to explain a concept or demonstrate their understanding,
- creation of videos to teach a skill to another pupil/year group,
- real world maths (e.g. taking photographs and labelling lines of symmetry)
- to provide children with accessible help videos if required,
- trial and error activities,
- using resources on the iPad to support learning (e.g. number pieces base ten)

Calculators should not be used as a substitute for good written and mental arithmetic. They should therefore, only be introduced near the end of Key Stage 2 to support pupils' conceptual understanding and exploration of more complex number problems, if written and mental arithmetic are secure.

Assessment and Feedback

Assessment

To identify what pupils understand and to ensure that **all** pupils are supported, stretched and challenged, teachers use a range of formative assessment techniques throughout weekly lessons. These include but are not limited to:

- Questioning
- Observations
- Analysis of lesson outcomes
- Exit tickets
- Mini quizzes

Children are given opportunities to apply their skills learnt in Mathematics lessons within the wider curriculum. Children are able to verbalise their learning using correct tier 3 mathematical vocabulary.

Teachers planning for a new area of maths, which has not been taught during the current academic year should use a pre-assessment task to enable them to plan appropriately, pitched work. Once the-pre-assessment task has been completed, teachers plan the

following area of work on a specific area of maths using the Power Maths focused White Rose planning as a guideline. Teachers use this pre-assessment task to plan pre-teaching activities to be completed with groups of children during the week prior to the area being taught, during morning maths time.

Teachers use professional judgement and assessment data to clarify which pupils need extra support/manipulatives/structures to help them reach age related expectations, and which children have the skills already embedded so need to show their deep learning and 'mastery' of the subject through problem solving and applying their skills/knowledge. Teachers are encouraged to use a range of resources to support those working beyond age related expectation.

Summative data is collected once a term, following formal assessments. Teachers use professional judgement, combined with formal assessment data to record pupil progress data on Insight.

Feedback

Feedback is given to pupils in order to further their learning and improve their thinking. Our regular, timely feedback has an impact on pupils' future performance and gives children the responsibility for improving their own work. In Mathematics, some of the ways in which pupils receive feedback are:

- Live marking;
- Verbal comments and questions;
- The use of marking codes against written work;
- Up to three misspellings of age-related words and homophones are indicated by the teacher for children to correct;
- Comments left on Seesaw to move learning on →, which are responded to with a comment from the pupil;
- Peer and self-assessment are utilised.

Monitoring and Evaluation

The Senior Leadership Team and Mathematics Lead manage a programme of monitoring and evaluation of the teaching and learning in the school through:

- The implementing of a monitoring cycle
- The monitoring of Mid Term planning
- Open door days
- Learning walks
- Subject Ambassador led pupil voice
- Subject Surgeries to include:
  - Analysis of Data
  - Scrutiny of teacher assessments and moderation
  - Moderation of standards in mathematics.

Our Mathematics curriculum is also regularly reviewed for effectiveness by class teachers to see if children have learnt what was intended. For example, if an end of unit test showed that children had a misconception about multiplying fractions then they would modify the way in which that concept would be taught for the next cohort of children. This results in us constantly adapting to improve our curriculum to ensure it evolves and keep it ambitious.

Roles and Responsibilities

Governing Board

The governing board will monitor the effectiveness of this policy and hold the headteacher to account for its implementation.
The governing board will also ensure that:

- A robust framework is in place for setting curriculum priorities and aspirational targets
- Enough teaching time is provided for pupils to cover the National Curriculum and other statutory requirements
- Proper provision is made for pupils with different abilities and needs, including children with special educational needs (SEN)
- The school implements the relevant statutory assessment arrangements
- It participates actively in decision-making about the breadth and balance of the curriculum
- It fulfils its role in processes to disapply pupils from all or part of the National Curriculum, where appropriate, and in any subsequent appeals

Headteacher

The headteacher is responsible for ensuring that this policy is adhered to, and that:

- All required elements of the curriculum, and those subjects which the school chooses to offer, have aims and objectives which reflect the aims of the school and indicate how the needs of individual pupils will be met
- The amount of time provided for teaching the required elements of the curriculum is adequate and is reviewed by the governing board
- The school's procedures for assessment meet all legal requirements
- The governing board is fully involved in decision-making processes that relate to the breadth and balance of the curriculum
- The governing board is advised on whole-school targets in order to make informed decisions

- Proper provision is in place for pupils with different abilities and needs, including children with SEN

Subject Lead

The Mathematics leader will take lead responsibility for providing leadership and management for Mathematics to secure:

- High-quality teaching
- Effective use of resources
- Improved standards of learning and achievement for all

Further details can be found in the Subject Leader Roles & Responsibilities document.

Other Staff

Other staff will ensure that the school curriculum is implemented in accordance with this policy.

Scaffold and Challenge

Teachers set high expectations for all pupils. They will use appropriate assessment to set ambitious targets and plan challenging work for all groups, including:

- More able pupils
- Pupils with low prior attainment
- Pupils from disadvantaged backgrounds
- Pupils with SEN
- Pupils with English as an additional language (EAL)

Teachers will plan lessons so that pupils with SEN and/or disabilities are scaffolded in order that they can study Mathematics wherever possible and ensure that there are no barriers to every pupil achieving.

Teachers will also take account of the needs of pupils whose first language is not English. Lessons will be planned so that teaching opportunities help pupils to develop their English, and to support pupils to take part in all subjects.

Further information can be found in our statement of equality information and objectives, and in our SEN policy and information report.

In planning work, the teachers will aim:

- To provide breadth and balance of activities for all children;
- To provide a differentiated Maths curriculum to meet the needs of all the children through the continuity of experiences;

- To set suitable learning challenges for individuals or small groups of children where necessary;
- To respond to pupils' diverse learning needs;
- To liaise with the SENCo to ensure that provision is made for all children with SEND;
- To relate activities for SEND children to their Personal Learning Plan targets;
- To overcome potential barriers to learning and assessment for individuals and groups of pupils;
- To provide scaffolding for pupils where necessary.

Pupils identified as needing extra support in Maths will be given the appropriate help in the classroom. Providing for pupils with special educational needs should take account of each pupil's particular learning plan.

Spoken Language

The national curriculum for Mathematics reflects the importance of spoken language in pupil's development across the whole curriculum - cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their mathematical vocabulary and presenting mathematical justification, argument or proof/their ideas. They must be assisted in making their thinking clear to themselves as well as others and teachers should ensure that pupils build secure foundations by using discussion and carefully tailored questions to probe and remedy any misconceptions.

British Values & Culture

British Values

Our school reflects the British values in all that we do. We aim to support our children throughout their primary school journey so they can develop into safe and caring individuals who will become democratic, responsible and tolerant adults who will make a positive difference to the society they live in.

Links to other policies

This policy links to the following policies and procedures:

- EYFS Policy
- SEND Policy
- Equality Information and Objectives

Legislation and Guidance

This policy reflects the requirements of the National Curriculum programmes of study, which all maintained schools in England must teach.

It also reflects requirements for inclusion and equality as set out in the Special Educational Needs and Disability Code of Practice 2014 and Equality Act 2010, and refers to curriculum-related expectations of governing boards set out in the Department for Education's Governance Handbook.