



Ryelands Primary and Nursery School

Mathematics Policy

This policy was developed as part of a consultation process involving pupils, staff, parents and Governors of the school, based on best practice advice (where available) from Lancashire County Council.

The implementation of this policy will be monitored by: Mathematics Subject Leader and SLT

This policy should be read in conjunction with the following documents:

- Teaching and Learning Policy
- Marking, Presentation and Feedback Policy
- Assessment Policy
- SEN Policy
- Written Calculations Policy

This policy will be reviewed as appropriate by the subject co-ordinator and members of the Senior Leadership Team.

Policy Created:	September 2018		
First Presented to Governors for approval:	26 th September 2018		
Proposed Review Cycle/Next Date:	3 Year		September 2024
Approved by (Headteacher)		Approved by (Governor)	
Date:		Date:	
Policy Review History			
Date: September 2018	Date: November 2021	Date:	
Key Changes: <ul style="list-style-type: none"> • Ethos statement updated in line with new school mission statement. • Updated to reflect 'teaching for mastery' approaches in <i>Teaching and Learning including Planning and Organisation</i> • Contribution in Mathematics to Teaching in Other Curriculum Areas 	Key Changes: <ul style="list-style-type: none"> • Amendments to Curriculum Overview and Progression section as a result of curriculum changes. • Intervention – amended to reflect the 'same day' approach. • Mastering Number KS1 • Fluency Session KS2 	Key Changes:	
Presented to Governors: Curriculum Committee 26/9/2018	Presented to Governors: Curriculum Committee 10/11/2021	Presented to Governors:	

Ryelands School – Mission Statement

Imagine believe achieve

In our school community every individual is respected valued and nurtured; we share a belief about every child's ability to exceed their dreams.

We teach children to love life themselves and the world around them. Through learning we foster curiosity, perseverance and resilience.

We believe that our attributes are not fixed; that our abilities and intelligence can grow through engagement effort and by embracing challenge.

Aims

In teaching children mathematics at Ryelands Primary School we aim for our children to have;

- a positive 'can do' attitude towards the subject. We embrace the idea that every child can succeed in mathematics
- a fascination of mathematics and the awe and wonder it can create
- competence and confidence in mathematical knowledge, concepts and skills
- an ability to solve problems, reason, think logically and to work systematically and accurately.
- initiative and an ability to work both independently and in cooperation with others
- an ability to communicate clearly using mathematical terminology
- an ability to use and apply mathematics across the curriculum and in real life
- an understanding of mathematics through a process of enquiry and experiment

Subject Statement

Mathematics is a tool for everyday life. It is a whole network of concepts and relationships which provide a way of viewing and making sense of the world. It is used to analyse and communicate information and ideas and to tackle a range of practical tasks and real life problems. It also provides the materials and means for creating new imaginative worlds to explore.

Teaching and Learning including Planning and Organisation

At Ryelands Primary and Nursery school we have adopted a 'mastery' approach to teaching and learning in mathematics. As part of this approach we believe that;

- All pupils are capable of understanding and doing mathematics, given sufficient time. Pupils are neither "born with the maths gene" nor "just good at maths".
- With good teaching, appropriate resources, effort and a "can do" attitude all children can achieve and enjoy mathematics.

This approach has number at the heart and a large proportion of time is spent reinforcing number to build competency and ensure children grasp the basic skills before moving on. Teachers stay in the required key stage (i.e. we don't move on to content from other year groups) and support the ideal of depth before breadth. We plan to ensure children have the opportunity to stay together as they work through the lesson as a whole group. Adding to this we provide plenty of opportunities to build reasoning and problem solving elements into the curriculum.

We believe that all children, when introduced to a new concept, should have the opportunity to build competency by taking the CPA approach;

- Concrete—children should have the opportunity to use concrete objects and manipulatives to help them understand what they are doing.
- Pictorial—alongside this children should use pictorial representations. These representations can then be used to help reason and solve problems.

- Abstract—both concrete and pictorial representations should support children’s understanding of abstract methods.



Each child receives a 1-hour lesson every day dedicated to mathematics. Alongside this we dedicate 5-10 minutes each day to develop number fluency in KS2 (this includes times tables, number facts etc.). Children in KS1 have a dedicated ‘mastering number’ session where they learn key number skills for 15 minutes each day.

Lesson Design

- Lessons are carefully designed and structured to develop the necessary small conceptual steps for mastery.
- Examples are chosen carefully to highlight the important conceptual ideas and tasks are chosen to provide pupils with intelligent practice.
- The use of dialogue (between teacher and pupil and between pupils themselves) is established as an important strategy for supporting pupils' conceptual understanding and their reasoning skills.
- Pupils are encouraged to talk in full sentences, use precise mathematical language and to conjecture, reason and prove. (sometimes referred to as a ‘STEM sentence’)
- Precise questioning during lessons ensures that pupils develop fluent technical proficiency and think deeply about the underpinning mathematical concepts.
- The whole class are taught together ensuring that all pupils have access to the important mathematical ideas, skills and concepts.
- Differentiation is achieved through questioning and scaffolding rather than by offering different tasks.
- All pupils are regularly challenged through more demanding questions which deepen their understanding.
- It is important for pupils to develop their procedural fluency alongside conceptual understanding and practice is an important part of achieving this.
- However, mechanical practice should be avoided. Pupils need to be supplied with tasks which require “intelligent practice” and have been designed using the principles of variation theory.

The Early Years Foundation Stage

Work undertaken within the Early Years Foundation Stage is guided by the requirements and recommendations set out in the Revised Statutory Framework for the EYFS (2021), the Development Matters in the EYFS (2012) and Birth to 5 Matters (2021). For further details refer to the Early Years Foundation Stage Policy.

Curriculum Overview and Progression

As of September 2021, we have adopted the NCETM curriculum prioritisation materials to help structure the Ryelands Mathematics Curriculum. The NCETM framework provides coherent sequencing for the primary maths curriculum. It draws together the DfE guidance on curriculum prioritisation, with the high-quality professional development and classroom resources provided by the NCETM Primary Mastery PD materials.

All children will be taught the following aspects of mathematics:



Each area is sequenced/organised as follows for each year group over the course of the year:

Reception: Number

- 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

Reception: Numerical Patterns

- 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.

Year 1:

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2					
Unit	1	2	3	4	5	6	7	8	9	10	11

Year 2

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2								
Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14

Year 3

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2					
Unit	1	2	3	4	5	6	7	8	9	10	11

Year 4

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2						
Unit	1	2	3	4	5	6	7	8	9	10	11	12

Year 5

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2								
Unit	1	2	3	4	5	6	7	8	9	10				
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2								
Unit	1	2	3	4	5	6	7	8	KS2 tests	9	10	11	12	13

Year 6

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2								
Unit	1	2	3	4	5	6	7	8	KS2 tests	9	10	11	12	13
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2								

Contribution in 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 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.

Assessment, Recording and Reporting

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 Ryelands Primary School AoL is used appropriately, e.g. to provide a Teacher Assessment level and grade at the end of KS1.

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 Ryelands 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 *Assessment Grids*. These documents provide a clear criterion against which judgements can be made about current standards being achieved in mathematics. These documents also set out a progression of learning for individual strands of the National Curriculum against age related expectations.

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 the ‘assessment for learning’ questions within the planning frameworks/supporting materials;
- Use of ongoing teacher assessment and the assessment grids in order to identify gaps in attainment and at the end of each full term using this information to assess the child’s current attainment using the Entering, expected or exceeding judgements.
- Regular opportunities will be provided for pupils to use and apply their understanding through ‘assessment style’ questions. This will ensure that pupils are ready to approach their end of key stage assessments. The assessment style questions will be fed into the regular teaching and learning cycle, therefore there will be no need to time children or conduct these activities in any other classroom condition.

Inclusion including meeting the needs of SEN pupils and children entitled to PPG funding

Children with SEN are taught within the daily mathematics lesson and are encouraged to take part when and where possible (please see the section on differentiation). Where applicable children’s individual targets incorporate suitable objectives from the National Curriculum and teachers keep these objectives in mind when planning work.

When additional support staff are available to support groups or individual children they work collaboratively with the class teacher.

Within the daily mathematics lesson teachers not only provide activities to support children who find mathematics difficult but also activities that provide appropriate challenges for children who are high achievers in mathematics.

Intervention for KS1 and KS2

At Ryelands, in line with Teaching for Mastery principles, we have adopted a ‘same day’ intervention model. We want children to keep up, rather than catch up with their learning. The same day intervention model relies on the teacher using effective assessment for learning within a lesson to identify any child who is not keeping up. Any child identified as not keeping up with the learning will receive specific intervention on the same day (or at least before the next maths lesson takes place). The intervention will be in the form of further input, consolidation activities or review of previous work with further explanation. Under this model, those identified for intervention are likely to change often depending upon the concepts being taught and the needs of the individual children.

We also recognise that there may be some children who require significant support to meet age related expectations. In these situations, children will receive tailored support within the lesson alongside targeted intervention and or tuition. The school SENCO is available to further support children with specific difficulties with Maths.

Resources

At Ryelands we believe that the effective use of resources (see section on CPA above) can support children in their understanding of key mathematical concepts, especially in the early years of a child’s mathematical development. All classrooms are provided with the following resources:

• Large, long number line (so you can touch it)	• Set of 3D shapes
• Blank number lines and then demarcated in different multiples	• Variety of containers/objects for comparative measures of mass, length, capacity
• Washing line of numbers	• Weighing scales (properly called measuring scales!)
• Table top number tracks and number lines	• Balances
• Digit cards for all children	• A working clock (and individual ones for the pupils)
• Coat hanger and pegs	• Construction material (Clix, polydron)
• Slidy box	• Measuring cylinders/ containers (in different graduations)
• Place value arrow cards (teacher and pupils)	• Measuring tapes/ trundle wheels
• Operation cards	• Mirrors
• 100 squares	• Tracing paper
• Cuisenaire	• Playing cards
• Floor tiles	• Money (plastic, magnetic, real)
• Base 10 apparatus	• Counters, cubes etc.
• Art straws for partitioning	• Set of 2D shapes (including irregular)
• Loop games	• Target boards
• Counting stick and hoop	• Pin boards
• Unifix or Multi link	• Rulers
• 100, 20 bead bars with labels, 10 catcher	• Protractors
• Individual wipe boards	• Compasses
• Floor hoops for grouping and sorting	• Calculators (including an OHP calculator)
• Dice	• Angle estimator or geo strips
• Number strings	• Models and images charts

Professional development and training

Staff professional development is organised in line with school priorities. Training in Mathematics occurs regularly in staff meetings and INSET events. External courses or internal 1:1 support is also arranged for individuals where the need arises.

Health and Safety

As with all aspects of the Ryelands curriculum, any Mathematics activities undertaken that might be considered a risk to children should be risk assessed to ensure any potential hazards can be managed effectively.

Roles and Responsibilities

The class teacher will:

- Plan and deliver Mathematics lessons in accordance with the details within this policy
- Assess Mathematics in accordance with the details within this policy

The Mathematics subject leader in school will:

- Maintain an overview of Mathematics teaching and be aware of strengths and areas for development
- Take a strategic lead in subject review and development
- Support and advise colleagues
- Provide a model of good practice
- Keep abreast of new initiatives and disseminate appropriate information to relevant staff.
- Undertake regular monitoring of progress and standards in line with our Monitoring and Assessment policy
- Provide or organise staff professional development in line with school priorities
- Allocate available funding to areas of most need and manage resources throughout the school
- Write and evaluate an annual action plan for the subject which will become part of the school improvement plan.

Monitoring and Evaluation

It is the responsibility of the Subject Leader and the Head teacher to undertake regular and systematic monitoring and evaluation across the whole school, in line with our Monitoring and Assessment policy.

Monitoring will take place through:

- Classroom observation
- Planning scrutiny
- Scrutiny of work done in Mathematics books
- Pupil questionnaires
- Learning walks
- Discussions with staff about Mathematics
- Analysis of termly assessments and end of Key Stage SAT results