



Together we learn, together we succeed

Mathematics Policy 2021

Approved by:

Rusper Full Governing
Board

Date: 5th April 2022

Last reviewed on:

Next review due by: Spring 2024

Contents

1. Vision
2. Intent
3. Statutory requirements
4. Policy development
5. Curriculum
6. Implementation of Maths
7. Impact
8. Roles and responsibilities
9. Parents' right to withdraw
10. Training
11. Monitoring arrangements

Appendix 1: Curriculum map

Appendix 2: Progression of skills document

1. Vision

Our aim at Rusper Primary School is for all children to enjoy mathematics and have a secure and deep understanding of fundamental mathematical concepts and procedures. We aim to prepare our children for the opportunities and challenges of the 21st century. We want successful learners, confident individuals and responsible citizens. At Rusper, we want children to see the mathematics that surrounds them every day and enjoy developing vital life skills in this subject. By the time children leave Rusper Primary School, they will be able to:

- To develop a positive and confident attitude to mathematics
- To make an active contribution to their own learning, by developing the skills of independence and enquiry
- To become confident and competent working with mathematics
- To develop an understanding of the ways in which information is gathered and presented
- To become thinkers and problem solvers
- To develop a clear understanding of the language of mathematics
- To develop logical thinking and reasoning, enabling them to record work clearly and in a variety of ways

2. Intent

Rusper Primary School will endeavour to provide the highest possible quality of mathematical education. It will meet the requirements specified in the National Curriculum (2014). All children will be taught to develop their mathematical skills to the best of their ability. This school will aim to provide a high standard of mathematical education and will promote knowledge, skills and understanding at all levels. The target is for all children to reach their age related expectations in numeracy to prepare them for the world around them.

Rusper Primary School will offer a caring, supportive environment to enable the children to reach their potential as mathematicians from the educational provision available. In order to achieve this, our aims as teachers are:

- To encourage an enthusiastic and inquisitive attitude to mathematics
- To foster high standards of achievement in mathematics
- To develop pupils' numeracy and mathematical fluency, reasoning and problem solving in all subjects so that they understand and appreciate the importance of mathematics.
- To teach children to apply arithmetic fluently to solving problems, understand and use measures, make estimates and sense check their work.
- To enable children to apply their geometric and algebraic understanding, and relate their understanding of probability to the notions of risk and uncertainty.
- To help children understand the cycle of collecting, presenting and analysing data.
- To teach children to apply their mathematics to both routine and non- routine problems, including breaking down more complex problems into a series of simpler steps.
- To equip children with strategies to enable them to apply mathematics to real and unfamiliar situations within and beyond the classroom
- To develop an appreciation of the intrinsic value and fascination of mathematics as well as its usefulness in life
- To be fluent mentally at basic 4 operation number sentences

3. Statutory requirements

As a maintained primary school we must provide Mathematics education to all pupils as per the DfE statutory Primary National Curriculum (2014) – Mathematics Programme of Study

4. Policy development

This policy has been developed in consultation with staff, pupils and parents. The consultation and policy development process involved the following steps:

1. Review – the subject leader gathered all relevant information including relevant national and local guidance
2. Contextual data – the subject leader gathered contextual data relating to pupil demographics and historical pupil performance at Rusper Primary School
3. Staff consultation – all school staff were given the opportunity to look at the policy and make recommendations
4. Parent/carer consultation – parents and carers are invited to raise questions about the policy
5. Ratification – once amendments were made, the policy was shared with governors and ratified

5. Curriculum

Our curriculum is set out as per Appendix 1 but we may need to adapt it as and when necessary.

Our Mathematics teaching, curriculum and learning is supplemented by schemes of learning from 'White Rose Maths'. This scheme helps inform our medium term planning as to what is taught within across each term.

White Rose scheme of work enables children to meet the end of year attainment targets outlined in the National Curriculum and the aims of the scheme align with those in the National Curriculum.

For more information about our curriculum, see our curriculum map in Appendix 1.

6. Implementation of Maths

Implementation of our Mathematics curriculum:

We follow the White Rose Mathematics scheme that takes a Mastery approach to Mathematics, in which the individual strands below are taught:

The national curriculum identifies three main aims in the primary phase:

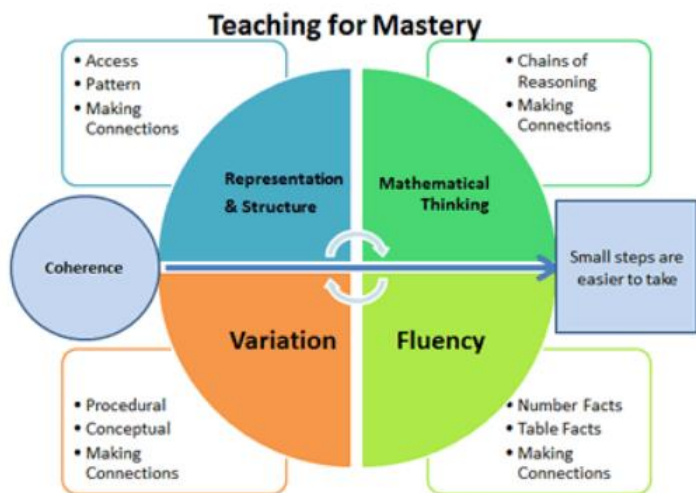
- Become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **Reason** mathematically by following 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.

The National Curriculum states 'Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas.' Therefore, it is organised into distinct domains. However, pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. *(National Curriculum, 2014)*

A mastery approach is

"... pupils of all ages acquiring a deep, long-term, secure and adaptable understanding of the subject. The phrase 'teaching for mastery' describes the elements of classroom practice and school organisation that combine to give pupils the best chances of mastering maths. Achieving mastery means acquiring a solid enough understanding of the maths that's been taught to enable pupils to move on to more advanced material."

(NCETM)



A central component in the delivery of Mastery maths at Rusper Primary School is to develop 5 key areas: fluency, reasoning, problem solving, representation and cohesion.

Credit to NCETM

Coherence

Lessons are broken down into small connected steps that gradually unfold the concept, providing access for all children and leading to a generalisation of the concept and the ability to apply the concept to a range of contexts.

Representation and Structure

Representations used in lessons expose the mathematical structure being taught, the aim being that students can do the maths without recourse to the representation

Mathematical Thinking

If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the student: thought about, reasoned with and discussed with others

Fluency

Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics

Variation

Variation is twofold. It is firstly about how the teacher represents the concept being taught, often in more than one way, to draw attention to critical aspects, and to develop deep and holistic understanding. It is also about the sequencing of the episodes, activities and exercises used within a lesson and follow up practice, paying attention to what is kept the same and what changes, to connect the mathematics and draw attention to mathematical relationships and structure.

In order to develop a coherent and comprehensive conceptual pathway through mathematics, staff use the White Rose Maths Schemes of Learning (specifically mixed-age documents) as a starting point. The focus is on the whole class progressing together. In some situations, lessons may be adapted to focus on year group specific objectives due to the class being mixed-aged. The key points within a Mathematics lesson structure will show that:

- Learning is broken down into small, connected steps, building from what pupils already know.
- Difficult points and potential misconceptions are identified in advance and strategies to address them planned.
- Key questions are planned, to challenge thinking and develop learning for all pupils.
- Contexts and representations are carefully chosen to develop reasoning skills and to help pupils link concrete ideas to abstract mathematical concepts.
- The use of high quality materials and tasks to support learning and provide access to the mathematics, is integrated into lessons. These may include White Rose Maths Schemes of

Learning and Assessment Materials, NCETM Mastery Assessment materials, NRICH, Classroom Secrets, Twinkl, visual images and concrete resources.

- Opportunities for extra fluency practice (instant recall of key facts, such as number bonds, times tables, division facts, addition and subtraction facts) should be provided outside mathematics lessons (morning starters or post-lunch activities).

Inclusion

Special Educational Needs

Children with Special Educational Needs (SEN) are involved in all aspects of the Maths curriculum and study at level appropriate to their needs. Children who are experiencing difficulties or who need extra support to reach the expected levels of attainment are identified using the INSIGHT system. Once identified, time is then taken to ensure pupils access the learning that is age-related but is adapted to meet their needs.

Quality first teaching and in class intervention is the key approach for supporting children with specific needs. In class, children who experience difficulty with Maths or would benefit from extra help are supported during independent activities by a teaching assistant or the class teacher. The key aim is to ensure that the pupil is accessing the same learning as their peers. This means that the same key objective will be the focus of the session, but the tasks will be adapted to suit their individual need. In order to ensure high standard of quality first teaching, all staff will follow the guidance given referenced in '*West Sussex Ordinarily Available Inclusive Practice (2021)*'.

For example, the Concrete-Pictorial-Abstract (CPA) approach to learning within Mastery allows pupils with SEN to focus their learning at a level that is suitable for them. The teacher is able to adapt the lesson where a SEN pupil might focus on the Concrete or Pictorial aspect instead of moving onto the Abstract.

Also, with an approach that takes small steps towards the learning outcomes will help support pupils with SEN.

"A good maths progression will break down complicated concepts into manageable steps, enabling children to focus on one new aspect at a time and build on this understanding as their lessons progress. This targeted focus ensures a deep understanding and provides opportunities for success, which is great for building confidence and means plenty of time is allocated to learning fundamental concepts".

(Hiatt, K 2018)

A pupil whose difficulties are severe or complex will be supported with an individual programme which identifies targets that can be met during Maths sessions. Children that experience difficulties will have the learning intentions broken down into achievable goals with resources and materials that help make it relevant to their own experiences. Teachers will consult with the SENCo for support and advice about such support.

More Able Pupils

More Able pupils are identified in the planning stage of a lesson. However, this may adapt as the lesson progresses. Children will be challenged through one of the following ways:

- Differentiated work to include more examples of Problem Solving and Reasoning

- Direct questions which aim to develop their Reasoning and Problem Solving skills
- Opportunities for pupils to apply their understanding in a range of different contexts
- Encourage pupils to make links to other areas of the Mathematics curriculum

7. Impact

At Rusper Primary School, the impact of the Mathematics teaching is to ensure that pupils leave the school equipped with a range of Mathematics skills to enable them to succeed in their secondary education and to be able to enjoy and appreciate Mathematics throughout their lives.

The expected impact is that children will:

- Have an enthusiastic and inquisitive attitude to mathematics
- Have strong numeracy and mathematical fluency, reasoning and problem-solving skills so that they understand and appreciate the importance of mathematics.
- Be able to apply arithmetic fluently to solving problems, understand and use measures, make estimates and sense check their work.
- Be able to apply their geometric and algebraic understanding, and relate their understanding of probability to the notions of risk and uncertainty.
- Have a good understanding of the cycle of collecting, presenting and analysing data.
- To be able to apply their mathematics to both routine and non-routine problems, including breaking down more complex problems into a series of simpler steps.
- Be equipped with strategies to enable them to apply mathematics to real and unfamiliar situations within and beyond the classroom
- Have an appreciation of the intrinsic value and fascination of mathematics as well as its usefulness in life
- Be fluent mentally at basic 4 operation number sentences

At Rusper Primary School, our Mathematics teaching and learning is successful because:

- There is regular CPD for teachers and TAs
- There is regular monitoring provision which leads to cycles of improvement. Monitoring provision might include: Observations, Book Looks, Pupil Conferencing and Data analysis
- Quality first teaching is at the forefront to support all children achieve their best
- We use a range of interventions where required including in class interventions and a tutoring programme

Assessment and progress

Assessments can be formative and summative in Maths. These will vary in the way that they are being used and also the focus area of Maths.

Formative on-going teacher assessment takes within the daily lessons of Mathematics. Teachers regularly carry out Assessment for Learning (AfL). AfL focuses on key strategies which will encourage pupils to express what they are thinking. These strategies are:

- Observing
- Questioning
- Listening
- Discussing
- Reviewing their work in progress

“Teaching is fuelled by immediate ‘live’ information. This allows us to spot gaps, plan the next steps in learning and facilitate upgrades in children’s knowledge and understanding. When an assessment event or activity provides us with solid “live” evidence it can be used as feedback to modify teaching and learning activities..”

(Maths No Problem, 2021)

Therefore, the use of these AfL strategies are vital to ensuring that the pupils make progress and supports their mastery and attainment.

Throughout a lesson, assessments are made about groups and individuals as learning is continually evaluated and adapted to meet individual’s needs. By using a mastery approach to teaching Mathematics, a teacher is able to regularly apply a structure which will allow them to teach-assess-teach-assess. Assessments might be made by using key strategies as mentioned above alongside shorter tasks such as quizzes, Diagnostic Questions etc. From these assessment points, targets and next steps in the learning are set to show which steps pupils need to make to improve.

To help support our assessment and provide next steps in pupils learning, we use a Skills Progression document (Appendix 2). This document has been created to break down each Key Objective from the National Curriculum. It enables teachers to plan out the key steps in order to make the learning successful for the individual along with aiding in assessment and proving next steps for the pupils. Included in this Skills Progression is a progression of vocabulary across the Mathematics curriculum. This is vital to ensure children are confident in understanding and using these technical terms at the relevant stages in their develop.

Summative assessments are made using the following:

- NFER Maths tests in Arithmetic and Reasoning (taken termly); Teacher assessment (KS1/KS2)
- Year 4 Multiplication Check

8. Roles and responsibilities

8.1 The governing board

The governing board will approve the Mathematics policy, and hold the headteacher and subject leader to account for its implementation.

8.2 The headteacher and subject leader

The headteacher and subject leader are responsible for ensuring that Mathematics is taught consistently across the school

8.3 Staff

Staff are responsible for:

- Delivering teaching of Mathematics in accordance with this policy
- Modelling positive attitudes to Mathematics
- Monitoring progress
- Responding to the needs of individual pupils

8.4 Pupils

Pupils are expected to engage fully in Mathematics, being respectful and sensitive to different cultural traditions and Mathematics.

9. Parents' right to withdraw

Parents do not have the right to withdraw their children from Mathematics education.

10. Training

Staff are trained on the delivery of Mathematics as part of their induction and it is included in our continuing professional development calendar.

11. Monitoring arrangements

The delivery of Mathematics is monitored by the subject leader through:

- Staff meetings
- Focused learning walks
- Reviewing pupils' development in Mathematics monitored by class teachers as part of our internal assessment systems.

The Head teacher and Mathematics Subject Leader will monitor the effectiveness of this policy on a regular basis. The Head teacher and Mathematics Subject Leader will report to the governing body on the effectiveness of the policy annually and, if necessary, makes recommendations for further improvements.

Appendix 1: White Rose Maths Curriculum Map

To access the White Rose Maths Curriculum Map, please follow the following hyperlink:

<https://assets.whiterosemaths.com/fixed/wrm/2019/11/National-Curriculum-Progression-Mixed-Age.pdf>

Appendix 2: Rusper Primary School Skill's Progression

To visit the school's website to gain access to Rusper Primary School's Mathematics Skills Progression, using the following hyperlink:

<http://www.rusper.w-sussex.sch.uk/website/maths/570027>

