



NEWBOROUGH CHURCH OF ENGLAND PRIMARY SCHOOL

Mathematics Policy

Reviewed: September 2023
Next review date: Autumn 2024

Statement

At Newborough C of E Primary School, we feel that mathematics is a most powerful and essential tool for life. It is made up of fascinating patterns and relationships. It is contained in everything we construct, everything we calculate and almost every problem that we have to solve in our everyday lives.

We endeavor to deliver a rich and varied mathematics curriculum in line with national expectations. We aim to develop confident mathematicians who are passionate about their learning. We do this by continuing to develop their conceptual understanding, by using manipulatives, models and images which develop pupils' fluency and by providing a range of opportunities for mathematical reasoning and problem solving, including 'real-life' mathematical scenarios.

This document will outline how mathematics is taught across our school following the math's mastery approach and using the White Rose schemes of learning.

Aims

Children will:

- Be encouraged to approach mathematical problems and puzzles with confidence and enthusiasm;
- Make connections between different areas of mathematics;
- Use and apply their knowledge and skills to real life problems;
- Be able to select and use appropriate resources confidently and safely;
- Develop and use a range of mathematical vocabulary in context;
- Appreciate that mathematical knowledge will help them understand and solve problems in other curriculum areas and in everyday life.

We follow the White Rose schemes of learning to plan and teach our mathematics lessons at Newborough C of E Primary School (see **Appendix 1** for year group overviews). Each teacher can find these resources online at <https://whiterosemaths.com/resources/schemes-of-learning/primary-sols/> or on the staff shared folder. Teachers will use a variety of resources, including for example 'Classroom Secrets' tasks to extend the more able. At the start of each unit teachers will complete a cold task (WRH End of Unit assessment – Version A) which children. This will be stuck in the child's book and marked by the teacher, but no further feedback will be given. These assessments will reviewed and used to inform the focus of subsequent lessons. At the end of the unit, children will then complete a second assessment (WRH End of Unit Assessment - Version B). This will then be marked by the teacher to assess progress within the unit.

Every class (Y1-Y6) has a dedicated daily maths lesson of 60 minutes (*when classes attend swimming, one slightly shorter lesson will take place on that day). In Year 2 and KS2 there will be an additional arithmetic fluency session (20 mins in Y2/3/4, 30 mins in Y5/6), this will focus on areas of weakness identified from termly assessments (Focus Targets) to secure and develop fluency, and will also include arithmetic practice assessments such as those from Twinkl. This will be recorded in pupils' maths books.

In the Foundation Year children will follow 'Early Learning Goals' and the White Rose Overviews which will lead them to taking part maths lessons and activities throughout the year. All class teachers deliver mathematics and a TA will be guided to support the lesson with specific tasks. This will continue into Year 1 until the Spring Term as they transition into more formal lessons. TA's will be particularly used for the delivery of Intervention Programmes, Pre-Teaching and Guided Group work.

The sequence of a maths lesson will follow (timings as guidance only – e.g. Flashback and Focus target may be together, target work may also be part of main lesson – e.g. word problems, children may also complete FB4 during early work to allow discussion time in lesson):

- Flashback 4 (5/10 mins) – **may be stuck in or children write FB4 in their books**
- Focus target work (5/10 mins) – **children write FT in their books**
- Teaching input and independent tasks, including mini-plenaries (35/40 mins)
- Plenary/application (5/10 mins)

In all year groups, children will be sat in pairs, sometimes of mixed ability, which will change often, to promote classroom discussion, promote a growth mindset, challenge children to reflect on their own strengths and weaknesses and so not to limit children's potential. Pairing also encourage life skills such as tolerance, negotiation and cooperation.

When paired with a higher achiever, children have opportunities to learn which they might never have had if placed with a 'matched' pair (Clarke, 2014).

TEACHING MATHS FOR MASTERY

The whole class works through the schemes of learning at the same pace with ample time on each topic before moving on. Ideas are revisited at higher levels as the curriculum spirals through the years.

DIFFERENTIATED ACTIVITIES

Tasks and activities are designed to be easy for pupils to enter while still containing challenging components. In KS2, children are sometimes given the opportunity to choose their level of challenge within the lesson (A, B and C). Children will have to choose their level of challenge based upon the problems at hand, but will be guided by teachers using the cold task analysis grids.

1	2	3
<ol style="list-style-type: none">1. 4% of 4002. 9% of 5003. 8% of 8004. 23% of 500	<ol style="list-style-type: none">1. 22% of £7002. 18% of 1.2kg <p>Which is greater?</p> <ol style="list-style-type: none">3. 34% of 500 or 41% of 600?4. 67% of 210 or 72% of 220	<ol style="list-style-type: none">1. A coat is on sale. The original price of the coat is £450. It has a 34% reduction. What is the new cost?

PROBLEM SOLVING

Lessons and activities are designed to be taught using problem-solving approaches to encourage pupils' higher-level thinking. The focus is on working with pupils' core competencies, building on what they know to develop their relational understanding, based on Richard Skemp's work.

Retrieval

At the start of each maths lesson, children complete the White Rose 'Flashback 4' task. This consists of 4 questions that revisit what has been taught the previous lesson, the

previous week, the previous unit and the previous term. This enables them to recall previously taught concepts based on the work of Rosenshines 10 Principles of effective instruction: Rosenshine suggests devoting between five and eight minutes every day, preferably at the start of a lesson, to review previous learning. As our cognitive load is quite small, if we don't review previous learning, then us trying to remember old information will get in the way of us trying to learn new information".

Reasoning Practice

Once Children are fluent in the skills taught, they may then be given opportunities to apply these skills to additional Reasoning and Problem Solving tasks planned by the class teacher (during the sequence of learning). There is a range of reasoning and problem solving tasks for each year group saved in the math's folder (Maths 2021-22) in Staff Shared and include:

- Convince me
- Four in a row
- I see reasoning
- Number Fun
- Real World Maths
- Tackling Add and Subtract
- Tackling Tables
- Talk it, Solve it
- Teaching for Mastery
- WRH termly Assessments for Y1-6 (Autumn, Spring, Summer)

Times Tables

At Newborough CE Primary School, we see the importance of children learning their times tables. We currently use the Tackling Tables program to support the acquisition of these vital facts. Tackling Tables is an innovative, exciting, game-based approach to develop competence and confidence in students of all ages. By playing the Tackling Tables cards, students see the power of number relationships rather than times tables in isolation. This is a fun and effective way to help them learn multiplication and the corresponding division facts "off by heart". Children practice their times tables at least twice a week, for a minimum of 15 minutes per session, using the Tackling Tables cards and have a weekly

test that is taken using the online app. Alongside this, children also use Time Tables Rockstars/Numbots app.

Arithmetic

Arithmetic is an important part of the curriculum. In KS2 children will have a dedicated arithmetic session, however these skills will also be applied within their daily maths lessons. In KS1 and KS2, children have arithmetic practice as part of their morning challenge work at least twice a week. The purpose of this is to consolidate key areas of mathematics.

Arithmetic sessions should:

- Provide opportunities to develop number sense
- Give students repeated practice of basic skills and concepts (fluency, consolidation, mastery of what has been taught)
- Be a whole-class ritual
- Establish a routine for starting mathematical thinking in the day, building classroom culture, and making connections with mathematics in everyday life.

Arithmetic expectations:

- 100% of the class must be ready to respond
- 100% of the class must look at and listen to the teacher

Teachers should plan their own arithmetic sessions ensuring that a variety of mental maths strategies and skills are being taught:

- Counting forwards and backwards
- Reordering
- Partitioning: counting on or back
- Partitioning: bridging a multiple of 10
- Partitioning: compensating
- Partitioning: using 'near' doubles

The Maths Calculation Policy gives advice and guidance on teaching a variety of mental maths strategies and can be found in the Staff Shared folder on the school drive.

Assessment and Record Keeping

In line with the school's Assessment Policy, marking will try to encourage and support. Small errors are clearly indicated in pen and verbal guidance and feedback will be given to scaffold learning, teach misconceptions and extend childrens' learning. Daily assessment will be through such marking and planning will show adaptations to suit this assessment. Teachers are record significant absenteeism in children's books for reference when assessing (e.g. absent, followed by the date).

Progress data will record children's termly progress. In KS1/KS2 children will complete the WRH end of term assessments and analysis spreadsheets will be used to inform formative assessments discussed during moderation. Areas of weakness will be addressed in early morning tasks or lesson starters where appropriate (focus will be identified on learning walls).

Teachers will have termly meetings with a member of SLT to discuss individual children's progress, as well as the cohort's. Statutory assessment takes place at the end of each Key Stage and other Key Stage 1 and 2 children will undertake an alternative form of assessment, to inform assessment, tracking and targeting. Progress will be reported in annual report.

Resources

The subject leader is responsible for the matching, monitoring and purchase of resources. Each class has a class set of common resources, which are designed to be accessed independently by children. Other resources are held centrally in the Maths resources cupboard between the Year 5 and Year 6 classrooms.

Opportunities to use technology to support both teaching and learning should be encouraged as they represent a valuable resource for groups and individuals e.g. Tackling Tables, Times Tables Rock Stars, Freckle etc. Technology is expected to be a regular tool and resource embedded throughout the delivery of Maths.

Additional Support

Intervention programmes, such as booster groups, Precision Teaching, Numicon and after school group tutoring in Yr6, are in place to raise the standard of borderline, weak or higher achieving performers. Any child receiving additional support will be tracked for evidence of that intervention.

It has always been easy to see the children who are falling behind in maths and target support there, but it is equally important to be aware of those achieving beyond expectations. To this end 'More Able' children are deemed to be those consistently working above the age related expectations. While hard data is a good guide to ability it is not exclusive and the teacher should make the subject leader aware of children who they feel have this level of potential but are unable to show it through tests.

Pupils with Special Educational Needs

Carefully planned differentiated work, should take into account children's needs at both ends of the special needs spectrum, so ensuring that each child has the opportunity to fulfil their potential. Specific support may be targeted when an additional adult is available, they will always work as directed by the teacher.

Equal Opportunities

All pupils will have equal opportunity to reach their full potential across the Mathematics Curriculum regardless of their race, gender, cultural background or any physical or sensory disability. Equality of opportunity is essential in this curriculum area as it provides pupils with access to other curriculum areas in the primary years and beyond.

Appendix 1: Yearly Overviews

EYFS

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
Autumn	Getting to Know You			Just Like Me!			It's Me 1 2 3!			Light and Dark			Consolidation	
Spring	Alive in 5!			Growing 6, 7, 8			Building 9 and 10			Consolidation				
Summer	To 20 and Beyond			First Then Now			Find My Pattern			On The Move				

Year 1

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place value (within 10)					Number Addition and subtraction (within 10)					Geometry Shape	Consolidation
Spring	Number Place value (within 20)			Number Addition and subtraction (within 20)			Number Place value (within 50)		Measurement Length and height		Measurement Mass and volume	
Summer	Number Multiplication and division			Number Fractions		Geometry Position and direction	Number Place value (within 100)		Measurement Money	Measurement Time		Consolidation

Year 2

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place value				Number Addition and subtraction					Geometry Shape		
Spring	Measurement Money	Number Multiplication and division						Measurement Length and height		Measurement Mass, capacity and temperature		
Summer	Number Fractions			Measurement Time			Statistics		Geometry Position and direction		Consolidation	

Year 3

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place value			Number Addition and subtraction				Number Multiplication and division A				
Spring	Number Multiplication and division B			Measurement Length and perimeter			Number Fractions A		Measurement Mass and capacity			
Summer	Number Fractions B		Measurement Money		Measurement Time			Geometry Shape		Statistics		Consolidation

Year 4

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place value				Number Addition and subtraction			Measurement Area	Number Multiplication and division A			Consolidation
Spring	Number Multiplication and division B			Measurement Length and perimeter		Number Fractions				Number Decimals A		
Summer	Number Decimals B	Measurement Money		Measurement Time		Consolidation	Geometry Shape		Statistics	Geometry Position and direction		

Year 5

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place value			Number Addition and subtraction		Number Multiplication and division A			Number Fractions A			
Spring	Number Multiplication and division B			Number Fractions B		Number Decimals and percentages			Measurement Perimeter and area		Statistics	
Summer	Geometry Shape			Geometry Position and direction		Number Decimals			Number Negative numbers	Measurement Converting units		Measurement Volume

Year 6

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place value		Number Addition, subtraction, multiplication and division					Number Fractions A		Number Fractions B		Measurement Converting units
Spring	Ratio		Algebra		Number Decimals		Number Fractions, decimals and percentages		Measurement Area, perimeter and volume		Statistics	
Summer	Geometry Shape			Geometry Position and direction	Themed projects, consolidation and problem solving							