Constellation Trust

Rokeby Park Primary School

Mathematics Policy

Mathematics Policy

Introduction

This policy is intended to ensure that there is a consistent and sequential approach to the teaching of writing throughout the school to meet the requirements of the National Curriculum. This policy should be read in conjunction with the school's Calculation Policies, EYFS Curriculum and Assessment Policy.

Intent

At Rokeby Park Primary school, we offer the children a progressive mathematics curriculum based on the National Curriculum to develop mathematical knowledge and skills for our children. They will be positive and enthusiastic towards mathematics, with an awareness of the diversity of the subject. They will be competent and confident in taking risks to apply mathematical knowledge, concepts and skills. They will be able to solve problems, reason mathematically and think logically and systematically. They will be able to work independently and in cooperation with others. They will be able to use and apply mathematics across the curriculum, and to understand the application of mathematics in real life contexts and scenarios.

All children have equal access to the mathematics curriculum, regardless of race or gender. Children access the curriculum at the level appropriate to them, ensuring rapid measurable progress. Resources and learning environments are planned and designed to enable all children to access to the learning required. Differentiated activities are provided to support less able learners and challenge rapid graspers so they are able to work at greater depth in mathematics. The mathematics curriculum is ambitious for pupils with SEND to ensure they can access the subject at an appropriate level and make progress towards clearly defined end points.

Mathematical knowledge can be linked to engaging topics but will be gained by the teaching of year group progressive skills which build on previous learning, ensuring pupils' learning becomes embedded. In addition to this, pupils will engage in enrichment activities to support their learning of mathematics for a real purpose through Jigsaw and cross-curricular lessons.

By the end of EYFS children will:

Have a secure understanding of Number and Numerical Patterns across the EYFS Framework. Children will have a deep understanding of numbers to 10 (including the composition of each number), be able to develop their skill of subitising up to 5 as well as automatically recalling number bonds up to 5 and some number bonds to 10, including double facts. Furthermore, children will be able to verbally count beyond 20, recognising the counting system, comparing quantities up to 10 in various contexts and exploring and representing numbers within 10, including odds, evens and doubles. The EYFS children will use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects in order to help them solve problems. They will recognise, create and describe patterns, exploring characteristics of everyday objects and shapes, using their mathematical language to describe them.

By the end of Key Stage 1 children will:

Develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources, e.g. concrete objects and measuring tools. Pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. They should also use 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, pupils should know their number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency. Pupils should read and spell mathematical vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

By the end of Lower Key Stage 2 children will:

Become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. They will develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. Pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Pupils will have the opportunity to draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number. By the end of year 4, pupils should have instant recall of their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work. Pupils should read and spell mathematical vocabulary correctly and confidently using their growing word reading knowledge and their knowledge of spelling.

By the end of Upper Key Stage 2 children will:

Extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio. Pupils should 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 should consolidate and extend knowledge developed in number. Pupils will classify shapes with increasingly complex geometric properties and that they learn the required vocabulary they need to describe them. By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages. Pupils should read, spell and pronounce mathematical vocabulary correctly.

Any child working below their age-related expectation, will receive a tailored curriculum with personalised objectives taken from Rokeby Park's SEND Steps curriculum. This will enable all children to build the skills and knowledge needed to bridge the gap between themselves and their peers enabling them to reach their full potential. Some pupils accessed a personalised curriculum built off the AET Framework; their progress and outcomes will be logged on Tapestry.

Implementation

At Rokeby Park Primary School uses planning documents, which have been adapted by the mathematics leaders throughout the Constellation Trust, from White Rose Education's mastery scheme. These Constellation Trust planning documents ensure key concepts are taught progressively as pupils move through the school and that units are sequenced throughout the year to build knowledge and skills.

Progressive knowledge such as number bonds, times tables and the four operations are used to underpin pupils' understanding of place value and number within year groups. Lesson objectives are structured and sequenced so that final outcomes are secure and meaningful. Children do not learn objectives in isolation but continue to embed these through carefully planned application of their learning throughout the year. Additional teaching time is given for the embedding of times table knowledge. In LKS2, children are taking part in the Rekenrek Multiplication Fact study.

Teachers plan topics following a Mastery Approach. EYFS follow Power Maths scheme in line with the EYFS Framework 2021 and updated Development Matters documentation. Years 1 to 6 follow the White Rose Maths scheme building upon the firm foundations created in EYFS. Subject-specific vocabulary is

presented interactively in all classrooms from EYFS to Year 6, allowing frequent repetition and practice throughout the year. Stem sentences are provided during inputs and on classroom displays to frame how pupils should respond and to ensure basic skills and vocabulary acquisition is paramount. High-quality modelling, repetition, variation and intelligent practice need to be evidenced in every lesson across each year group with teachers anticipating misconceptions and how to address them. Reasoning and problem solving is a focus for the school and wherever possible children are encouraged to apply their knowledge and skills in different situations.

All children have access to the mathematics curriculum, as work is tailored appropriately for children with SEND. Children will learn through similar activities, with outcomes modified to suit all needs. It is the responsibility of the class teacher to adapt planning to suit the children's needs.

KPIs are used to assess children's understanding and are updated regularly. Cross-curricular mathematics is planned to allow further depth across our thematic approach and is outlined on Medium-Term and Short-Term Planning.

Spoken Language and Vocabulary

The national curriculum of mathematics reflects the importance of spoken language in pupils' development across the whole curriculum (cognitively, socially and linguistically); this is intrinsically important to the teaching and learning at Rokeby Park. The quality, variety and accuracy of language the pupils hear and speak are key factors in developing their mathematical vocabulary and presenting their written responses for application activities. They must be assisted in making their thinking clear to themselves as well as others and teachers should ensure pupils build secure foundations by using discussion to probe and remedy their misconceptions. Children are to be expected to answer in full sentences; just as they would in their written responses. Dialogue in the classroom is to be rich and often follow an "I say, you say, you say, you say, we say" approach.

Impact

Work in books and regular ongoing assessment is used as a measure of progress towards the identified end points. Pupils are given regular opportunities to recap and embed learning as well as applying their knowledge to solve a range of tasks and problems. Where gaps in learning are identified, the reasons for this are analysed and this information is used to plan further teaching or intervention activities where needed.

Some children will require extra support, either during or after lessons, to enable them to master certain concepts or elements. This should be carried out immediately to allow the children to access the next lesson to "keep up", rather than "catch up". Basic skills of number and letter formation, handwriting, spelling and punctuation are further embedded in mathematics teaching with high-expectations of spelling and reading in line with expectations for specific year groups.

Teacher assessments in mathematics are submitted on a termly basis and these are moderated both internally and across the Trust to ensure that judgements are accurate and fair. Moderation meetings are led by the Trust's Maths Lead.

SEND

We aim to ensure that all of our pupils learn to speak and write fluently so that they can communicate their ideas and emotions to others, regardless of their needs or disability. We tailor the curriculum to meet pupils' individual needs and remove barriers to learning through carefully planned, bespoke provision.

Teachers:

- provide those children with SEND with the skills and knowledge they need to read and spell, by direct instruction, progressing systematically with carefully structured, small and cumulative steps
- use instructional routines that become familiar
- provide materials that limit distraction; are clear, linear and easy to follow; are age-neutral or age-appropriate and can be adapted further, such as being reduced to individual items
- provide opportunities for work on vocabulary, find and gross motor skills and letter formation
- provide multiple opportunities for overlearning (recall, retrieval, practice and application at the level of the alphabetic code, word, sentence and text)
- provide resources to support those pupils who have poor working memory and require prompts to sequence their writing appropriately

Teaching for those children with SEND is delivered daily at a suitable pace for the child. It takes full account of the child's individual strengths, weaknesses, knowledge and understanding, and profile of needs as some children may require additional strategies.

Monitoring

Monitoring takes place regularly through sampling children's work, pupil and staff voice, teacher planning, book scrutiny, learning walks and lesson visits. Strengths and areas of development will be identified and support will be provided by the mathematics lead where necessary.

Roles and Responsibilities

The Head teacher will:

• actively support and encourage staff, praising good practice and supporting staff development, in-service training (particularly for the mathematics leader) and acquiring resources.

The Mathematics Leader will:

• advise and support staff in planning, teaching and learning of mathematics;

• monitor teachers' planning as part of on-going subject monitoring and evaluation of practice;

• use feedback from monitoring to develop an action plan for mathematics with realistic and developmental targets;

• audit, identify, purchase and organise all mathematics resources, ensuring they are readily available and well maintained;

• document and review the agreed ways of working through a written policy document and Constellation Trust planning and progression documents;

• compile a portfolio of children's mathematics work to evidence progression and examples of good practice for staff to refer to;

• keep up to date on new developments in the use of mathematics in the curriculum and inform staff;

• promote mathematics throughout the school.

The Class Teacher will:

• be responsible for the planning and teaching of mathematics as set out in this policy;

• use 'Key Performance Indicators' to inform teaching and learning as well as assess children's understanding;

• follow the subject's long term plan and develop termly year group medium term plans and pacing sheets;

• embed the Constellation Trust's mathematics documents within planning and quality first teaching;

• create and regularly refer to a key vocabulary display within the classroom linked to each unit;

• model effectively throughout the lesson using technology or resources in the classroom to embed concepts.

Resources

We have a wide range of concrete resources and interactive boards to access the internet and model during teaching. White boards and flipchart paper are available in each class to model strategies and

methods. Planning for lessons should use the following resources focusing on intelligent practice and conceptual and procedural variation:

- White Rose Maths Hub Small Steps
- White Rose Maths Premium Resources
- White Rose Maths IWB Resources
- NRICH
- Convince Me Cards
- NCETM Mastery and Mastery with Greater Depth exemplification
- NCETM Mastery PD materials
- Power Maths EYFS
- Gareth Metcalfe Reasoning and Problem Solving Activities
- TestBase

Appendix 1: Mathematical Vocabulary

MathsHUBS

Maths vocabulary

5 X 3 = 15

multiplicand multiplier product

Multiplicand – the thing to be multiplied by another
Multiplier – the quantity by which the multiplicand is to be multiplied
Product – the answer when 2 or more numbers are multiplied together

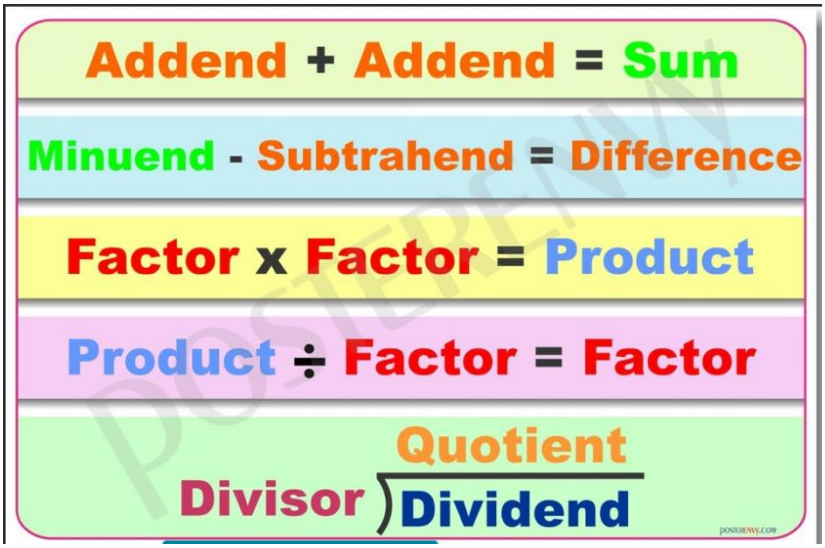
MathsHUBS

Maths vocabulary

8 ÷ 2 = 4

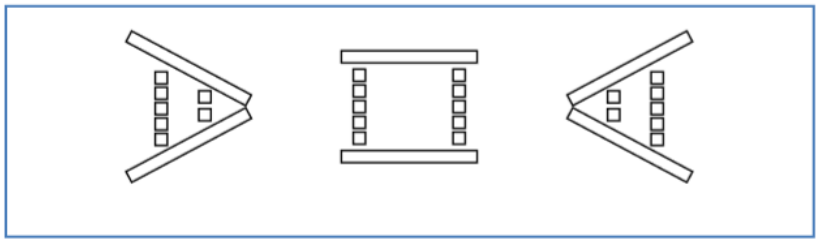
dividend divisor quotient

Dividend – the total to be divided
Divisor – the number by which the dividend is to be divided
Quotient – the answer – the number of times the divisor can be taken from the dividend



Teach inequality alongside teaching equality

To help young children develop their understanding of equality, they also need to develop understanding of inequality. Some of the LPS teachers have experimented with teaching inequality before, or at the same time as, equality (as they observed in lessons in Shanghai). One way to introduce the < and > signs is to use rods and cubes to make a concrete and visual representations such as:



to show that 5 is greater than 2 (5 > 2), 5 is equal to 5 (5 = 5), and 2 is less than 5 (2 < 5).

Balance scales can also be used to represent inequality.