RUDYARD KIPLING
Primary School & Nursery,
Woodingdean

Rudyard Kipling Primary School & Nursery Mathematics Policy

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Updated by Steve Jones

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Intent

At Rudyard Kipling Primary School & Nursery we believe that children should enjoy mathematics. Through planning engaging lessons and targeted teaching, we will enable all children to become enthusiastic mathematicians by developing their fluency, problem solving and reasoning skills, which are grounded in relevance and purpose in everyday experiences.

At the core of our curriculum is the CONCRETE, PICTORIAL AND ABSTRACT approach to maths.

Concrete – children have the opportunity to use concrete objects to help them understand and explain what they are doing.

Pictorial – children then build on this concrete approach by using pictorial representations, which can then be used to reason and solve problems.

Abstract – With the foundations firmly laid, children can move to an abstract approach using numbers and key concepts with confidence.

We will provide a stimulating and exciting learning environment that takes into account different learning styles and abilities and uses appropriate manipulatives to maximise the teaching & learning experiences of all children, to ensure they fulfil their full potential.

At Rudyard Kipling Primary School & Nursery we aim, through the teaching and learning of mathematics, to help children become learners that are:-

- Able to fluently recall key mathematical facts and methods
- Able to problem solve
- Able to reason
- Able to communicate mathematically
- Able to work collaboratively to solve problems
- Able to persevere

We believe mathematics is important because it is entwined in our everyday life, allowing us to make sense of the world around us.

Using mathematics enables us to model real-life situations and make connections and informed predictions. It equips us with the skills we need to interpret and analyse information, simplify and solve problems, assess risk and make informed decisions.

Throughout the whole curriculum, opportunities to extend and promote Mathematics should be sought. Within every Science topic, children will also develop their mathematical skills. This will help children appreciate how to *Work Scientifically* but also practise discrete mathematical skills. Nevertheless, the prime focus should be on ensuring mathematical progress delivered discretely or otherwise.

Implementation

At Rudyard Kipling Primary School & Nursery, we are committed to providing a motivating, challenging and comprehensive maths curriculum that is accessible to all and links the use of mathematics across a range of subjects, adding meaning to the learning of maths.

Our whole school approach to the teaching and learning of maths involves the following;

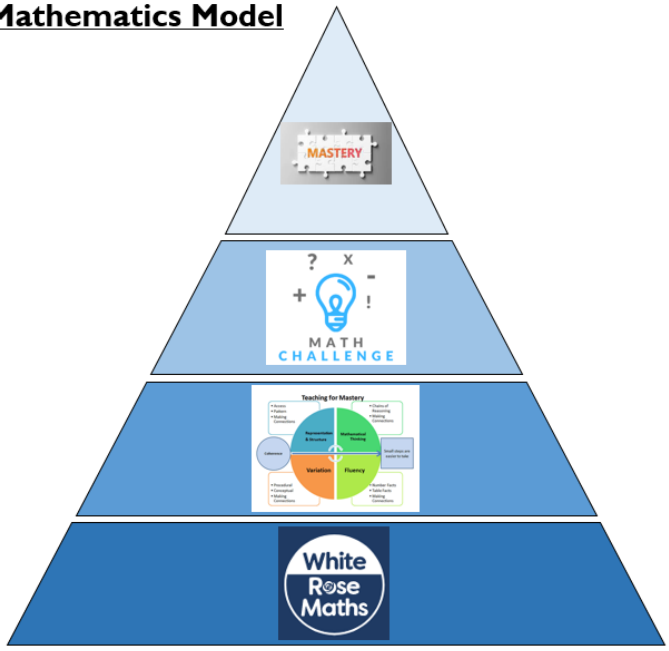
The RKPS Mathematics Model

Mastery With Greater Depth
Using **mathematical knowledge**
Using **manipulatives** to represent a problem
Teaching others a concept

Challenge
Deeper **questioning**
Responding to **feedback**
Precise Mathematical **Vocabulary**

Access for all learners
Progressive mastery approach to learning mathematics for all
SEND provision planned for.

Foundations
White Rose Hub – **Consistent** approach across RKPS which **builds on previous knowledge**.
Fluency, reasoning and problem solving.



Our maths planning is based on Schemes of Learning from White Rose Maths and enhanced by a wide range of resources. This ensures a progressive and thorough curriculum in every year group. Teachers know which objectives must be taught and assessed in each year group and can follow progressive small steps to ensure pupils have a comprehensive understanding of maths.

Mathematics is taught using the current national curriculum programme of study, with a clear focus on ensuring all pupils are taught to be fluent, able to reason mathematically and solve problems by applying their mathematical knowledge. In the three phases of primary education children are provided with a variety of opportunities to develop and extend their mathematical skills.

Mathematics will be taught for at least 1 hour a day, 4 days a week. On Friday's fluency will be the focus via a once a week 'Maths Mission' (fluency focused) session (see 'Developing Fluency' section).

Concrete, Pictorial, Abstract

Objects, pictures, words, numbers and symbols are everywhere. The mastery approach incorporates all of these to help children explore and demonstrate mathematical ideas, enrich their learning experience and deepen understanding. Together, these elements help cement knowledge so pupils truly understand what they've learnt.

All pupils, when introduced to a key new concept, should have the opportunity to build competency in this topic by taking this approach. Pupils are encouraged to physically represent mathematical concepts. Objects and pictures are used to demonstrate and visualise abstract ideas, alongside numbers and symbols.

School Curriculum – Programme of Study

EYFS

Mathematical skills are developed through teacher-led and child self-initiated sessions. There is a focus on problem solving, reasoning and mathematics through the following Early Learning Goals:

- Number
- Numerical patterns

Mathematical understanding is also developed through stories, songs, games and imaginative play. Mathematical language and early problem-solving skills are introduced through play and daily routines both indoors and in the outside learning environment. There are daily teacher led mental maths activities, a short whole class session and opportunities to practise the learning intention in the indoor and outdoor learning environment.

Key Stage 1

- Number
    - Number and place value
    - Addition and subtraction
    - Multiplication and Division
    - Fractions
- Measurements
- Geometry
    - Properties of shapes
    - Position and direction
- Statistics (Year 2 Only)

Key Stage 2

- Number
    - Number and place value
    - Addition and subtraction
    - Multiplication and Division
    - Fractions (including decimals for Years 4-6 only and percentages for Years 5 and 6 only)
- Measurements
- Geometry
    - Properties of shapes
    - Position and direction
- Statistics
- Ratio and Proportion (Year 6 only)
- Algebra (Year 6 only)

Impact

Learning mathematics develops logical reasoning, analysis, problem-solving skills, creativity and the ability to think in abstract ways. Mathematics equips us with many of the skills required for life, learning and work.

We want:

- Children to be happy learners within mathematics. They experience a wide-ranging number of learning challenges in the subject and know appropriate responses to them.
- Children of all abilities and backgrounds achieve well in mathematics, which are reflected in their attainment and progress.
- Children talk enthusiastically about their learning in mathematics and are eager to further their learning in the next stages of their education.
- There is a clear improvement of test success over time that reflects the impact of deep learning.
- Clear outcomes focus and guide all mathematical development plans and drive improvement.

- Children will become fluent in the fundamentals of mathematics. Through varied and frequent practice with increasingly complex problems over time, pupils will have the conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- Children will be able to reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, developing an argument, justification or proof using mathematical language.
- Children will solve problems by applying their mathematics in a variety of problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering to seek solutions.
- Through wider application of mathematics in the curriculum, children will have opportunities to explore key mathematic concepts and understand how mathematics is used in the wider world.

Role of the Maths Coordinators

The maths coordinator's role is to:

- Monitor and evaluate the quality and standards of mathematics throughout the school
- Write a yearly action plan to ensure standards continue to improve
- Support all staff in the teaching of mathematics
- Ensure the provision and use of effective resources
- Analyse local and national data and use this data to raise standards across the school.

Staff Development

Continuing Professional Development (CPD) is essential in raising the standard of mathematics teaching and learning. Regular staff meetings are held throughout the year to give teachers the opportunity to share good practice, learn new skills and develop their pedagogy.

Monitoring

The senior leadership team, together with the maths coordinator, are responsible for the monitoring and evaluation of standards, teaching, marking, assessment and planning of mathematics throughout the school. 'Book Looks' take place termly and evaluative written feedback is given. Standards of teaching and learning are monitored and evaluated through termly analysis of data and 360 monitoring.

Teaching and Learning

All children are able to access their daily learning and are able to succeed through deeper questioning and scaffolding which ensures all children are able to achieve and make good progress.

All plans will include:

- A clear learning intention using 'I am learning to…'
- Starer: Counting/Flashback Four/Fluent in Five
- Main Teacher Input: Key Question, Lesson Focus
- Clear success criteria
- Independent Learning Activities: Progressive learning, challenge, SEN provision, adult support
- Resources: Manipulatives
- Vocabulary: Precise Terminology (vocabulary) identified for the working wall (start of new topic)

Teachers will use a skilful mix of approaches including:

- opportunities for outdoor learning
- planned active learning which provides opportunities to observe, explore, investigate, experiment, play, discuss and reflect
- modelling and scaffolding the development of mathematical thinking skills
- learning collaboratively and independently
- opportunities for discussion, communication and explanation of thinking

- using relevant contexts and experiences, familiar to young people
- making links across the curriculum to show how mathematical concepts are applied in a wide range of contexts, such as those provided by science and social studies
- using technology in appropriate and effective ways for example interactive resources and websites.
- building on the principles of Assessment for Learning, ensuring that young people understand the purpose and relevance of what they are learning
- developing problem-solving capabilities and critical thinking skills.

In KS1 and KS2, lessons will include:

- 5 minutes mental maths session (Fluent in 5) which will revisit known facts and reinforce number and counting.
- Whole class session to introduce the learning objective for the day and to revisit prior understanding of concepts.
- Individual, paired or group work that practises the learning objective.
- Some lessons will include mini plenaries to assess children's understanding during a task and will frequently involve the use of the visualiser.

At the end of each session the children will revisit the learning objective and be asked to self - assess their understanding of the learning that has taken place. This will take the form of either verbal feedback or self and peer assessment against the success criteria.

Assessment and Feedback

Teachers are expected to make regular formative and summative assessments of each child's progress and to record these systematically. The assessments are discussed at the Pupil Progress Meetings every term. **(see Feedback and Assessment Policy)**

- **Formative Assessment**

Formative assessment of children's mathematical understanding is a fundamental part of the process of teaching and learning in school and is an important part of monitoring every child's progress. This could take the form of questioning, mini – plenaries, feedback and live marking, and self and peer assessment.

- **Summative Assessment**

Summative assessments of each child should occur at the end of each term, which together with ongoing formative assessment, informs judgments and progress discussed at Pupil Progress Meetings. Summative assessments must be at the appropriate level for each child. Moderation meetings are planned over the year with colleagues within the Dean's Partnership and the Local Authority to ensure that assessment judgements are secure.

We use:

- Half-termly teacher assessments throughout the year to aid planning.
- Termly assessments as a way of recording children's progress in objectives covered across that specific term. This information is then uploaded onto the child's mathematics assessment grid and put onto SIMS – an online tracking tool.
- Termly assessment to be planned for Yearly Overviews (whole school assessment weeks)
- Years 3-5 to use Testbase
- Years 2 and 6 to use previous SATs papers
- Year 1 – White Rose end of term assessments and Year 1 end of year Testbase assessment
- Reception – Baseline, teacher assessment
- Statutory End of Key Stage Assessments are carried out at the end of Key Stage One and Two and the results are published by the Local Authority.

Parental Involvement

We recognise and value the interest, support and involvement of the parents in their children's mathematical development.

- Parents are invited into school twice yearly to look at their children's work and discuss their progress with the class teacher.
- Reports are sent home at the end of the summer term.
- When significant changes are made to the mathematics curriculum, parents will be invited to a meeting or sent information via a letter.
- Termly curriculum chats give parents opportunities to ask questions about mathematics teaching and learning and to be informed of the mathematics learning planned for their child.
- Parent workshops (in-school where possible) are provided to parents to support with how children learn the four operations.

Developing Fluency *(see Whole School Overview)*

- ***Maths Mission -*** We have a developed and introduced a whole school system for children to practise and achieve fluency in basic counting, times table and division facts called Maths Mission. There are three different cards:
- **Counting Card -** This is introduced in Reception and children practise skills such as counting forwards and backwards to 10 and 20 and saying 1 more/1 less than a number to 10.
- **Times Table Card –** Once children have achieved all the targets on their counting card, they move on to learning their times tables. They are encouraged to count in steps of a number, then learn the times table in order. Finally, they need to know the times table facts out of order.
- **Division Card –** Children move on to learning their division facts once they have completed their times table card.

Children receive certificates in Special Mentions assembly once they have achieved one of the targets on their card and their success is celebrated.

- ***Times Tables***

From Year 2 onwards, children are expected to learn times tables by heart. In order to prepare the Year 4 children for the Statutory Times tables Test, classes will use Times Tables Rockstars as well as Maths Mission time to practise these key facts.

Developments from September 2020 (Covid)

Developments in September 2020 Due to the Coronavirus, (COVID 19) pandemic and the impact this has had on children's progress and learning during 'lockdown' and partial school closure, there have been changes made to address the need for a 'recovery curriculum' of which mathematics has been identified as a crucial subject for consideration.

Staff will undertake further training in the first few weeks of the Autumn Term 2020 to assist them with their ongoing planning of a 'recovery curriculum' for mathematics, led by the Mathematics Coordinator. The training will focus upon the non-statutory Guidance for Key Stages 1 and 2 published by the DFE in June 2020 as well as other recommendations set out by the Local Education Authority.

The publication 'identifies the most important conceptual knowledge and understanding that pupils need as they progress from year 1 to year 6. These important concepts are referred to as ready-to-progress criteria and provide a coherent, linked framework to support pupils' mastery of the primary mathematics curriculum.'

Teachers will make informal, formative assessments of the pupils in their classes at the very beginning of the Autumn Term to identify any 'gaps' or 'rusty' areas of knowledge and understanding in the 6 key areas as set out by this non-statutory guidance. These ready-to-progress criteria for all year groups are provided at the end of the introduction in the document. (Ready-to-progress criteria), and each criterion is explained within the corresponding year-group chapter so teachers will have a good understanding of the 'starting points' for their children. In most cases it is anticipated that children will need to revisit mathematics objectives from their previous year group to ensure that they have achieved mastery of these key areas before moving forward successfully onto the next stage of their learning in the subject. These objectives will be identified within their weekly planning.

The six areas of priority include:

- Number and Place Value
- Number facts
- Addition and Subtraction
- Multiplication and division
- Fractions
- Geometry

Whilst we will be prioritising these areas and spending the necessary time required to secure children's learning and mastery of these 'ready to progress' criteria, we will continue to follow the whole curriculum for Mathematics, which remains a statutory requirement. However, by meeting the ready-to-progress criteria, pupils will be able to more easily access many of the elements of the curriculum not included in the DFE guidance. Teachers and practitioners in the Early Years will continue to follow

The Early Years Foundation Stage curriculum while adopting the same philosophy and approach in their assessments and teaching during this 'different year.' Children will be taught to meet their needs and varying stages of development which will be 'driven by' ongoing assessment in a range of contexts.

Appendix

1. **Learning Environment and Manipulatives**

We recognise the importance of a stimulating learning environment. Each class will have:-

- A maths working wall or washing line which is changed regularly to reflect current learning and methods needed
- Success criteria clearly visible, where appropriate
- Vocabulary prompts around the class related to the current mathematics learning

As well as a stimulating learning environment, we believe that manipulatives are fundamental to developing a child's conceptual knowledge. Therefore, all classes should have clearly labelled mathematic resources grouped together in one dedicated area of the classroom. This area should be easily accessible to all children to enable them to independently find and use the resources.