

# Kings Road CPS



## Maths

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Date	July 2023

Excellence without compromise

# Kings Road Maths Policy 2023

## Curriculum Intent

At Kings Road, the Maths curriculum is designed to be accessible to all pupils regardless of their ability. We aim to prepare pupils for the next steps in their learning within the school structure, and to be able to take that learning beyond the school environment, into the wider world. Our pupils will be confident and competent mathematicians through excellent teaching, fostering a love of learning and encouraging inquisitiveness through exploration of concepts.

Through highly structured lessons, teachers develop strong conceptual understanding of Maths, with pupils being able to recall and apply their knowledge with confidence. Problem solving and investigation is the basis for many lessons with the emphasis on real life situations underpinning much of the planning and teaching.

Kings Road Primary School adopts a Mastery approach to the teaching of Maths which means that we aim for all children to have a deep understanding of mathematical concepts in a concrete, pictorial and abstract form and, to use the correct vocabulary when explaining their method. Where some children flourish in a certain area, we then seek to deepen their understanding further by encouraging them to build and demonstrate strong mental models that will help in all aspects of their life.

All staff aim to:

- promote a confident, positive attitude towards Maths, making lessons enjoyable and inclusive.
- promote confidence and fluency with number and the number system.
- promote the ability to solve problems through connecting prior learning, decision making and applying mathematical skills across a range of contexts including science and technology.
- promote reasoning by following a line of enquiry, discussion and being able to justify outcomes using technical language to support their findings.
- Promote deeper understanding of key mathematical concepts in a concrete, pictorial and abstract form
- promote the importance of Maths in everyday use in relation to life skills such as telling the time and handling money.
- encourage pupils to have fun with all aspects of Maths
- Celebrate the successes that every child has when learning maths

## Curriculum Implementation

At Kings Road, we understand that our children need a more bespoke curriculum than many other schools. As a school, we study the areas of:

- Number
- Measurement
- Geometry
- Statistics

Within these areas, we focus on developing mathematical understanding using 4 key principles

These areas are:

### Concrete

This area focuses on the understanding of number using concrete resources to represent digits. As children move through school, these resources are adapted to create larger ever-more increasing values.

### Pictorial

This area builds on the concrete component of maths and is an exploration visual representations of key mathematical concepts.

### Abstract

This area builds on the previous two and is the more well-known concepts. This area focuses on the mathematical representation of numbers and digits and the ability to use representation to solve problems.

### Explain

We recognise that many of our children may not have English as their first language. As a result, we focus on developing the mathematical vocabulary of our children and their abilities to explain the reasoning behind their work.

### The White Rose Scheme of Learning.

Kings Road supports the learning of its children by using the White Rose Maths scheme of work. We have carefully analysed what scheme would most benefit our children and fit the 4 core principle of mathematical learning within our school. This scheme of work starts in Nursery and moves sequentially and progressively through each stage of our children's learning. All our staff have the opportunity to develop their expertise with the NW1 Maths Hub. Maths Hubs are a DfE funded initiative with support from NCTL and the NCETM and aim to drive up standards in Maths.

### Maths planning.

Our long-term plan is in line with the White Rose Scheme of work. It is adapted to meet the needs of our children, but any adaptations are aligned to the 4 key principles. Planning develops lessons that are sequenced, with ever-increasing difficulty, at each stage of the pupil's development. There is a specific focus on the evolution of vocabulary which acts as a consistent thread through all planning.

A termly plan for each year group from 1 to Year 6 is available. Each term is split into twelve weeks. As part of each overview, a significant amount of time is devoted to developing key number concepts each year. This ensures pupils build their fluency as number sense will affect their success in other areas of Maths.

# Term by Term Objectives

# Year 1

## Year 1 Overview

	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	Number: Place Value		Number: Addition and Subtraction		
Spring	Time		Place Value		Number: Addition and Subtraction	Measures: Length and Height	Number: Multiplication and Division		Number: Fractions			
Summer	Number: Place Value			Number: Four Operations			Measurement: Money		Measurement: Weight and Volume			

*Example of yearly overview of planning used by all teaching staff.*

The overview is then broken down into learning objectives with guidance for the amount of time spent on each objective spread over the weeks:

## Term by Term Objectives

# Year 1

Year Group	Y1	Term	Summer										
Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12		
<b>Place Value</b> Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.  Count, read and write numbers from 1-100 in numerals and words.  Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than, most, least.  Given a number, identify one more and one less.			<b>Number: Four Operations</b> Represent and use number bonds and related subtraction facts within 20.  Add and subtract one digit and two digit numbers to 20, including 0.  Read, write and interpret mathematical statements involving addition (+) subtraction (-) and equals (=) signs.  Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.  Count in multiples of twos, fives and tens.  Solve one step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.			<b>Measurement: Money</b> Recognise and know the value of different denominations of coins and notes.  Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.		<b>Measurement: Weight and Volume</b> Compare, describe and solve practical problems for mass/weight [for example, heavy/light, heavier than, lighter than]; capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]  Measure and begin to record mass/weight, capacity and volume.					

*Example of learning objectives used by all teaching staff.*

A further breakdown of the learning objectives into individual lesson plans is available to all teaching staff. This gives teachers' detailed information of what to teach in each lesson.

It covers all the curriculum requirements for both KS1 and KS2 SATs in a time frame that acknowledges the constraints that schools are under.

As the planning is progressive and available to all teachers via the T-Drive, pupils working at different levels will be well supported. Teachers can access any year groups' plans and adjust them as necessary to suit the ability of each pupil. Progress will be recorded using the whole school method of MAGs as well as the T&P grids. Regular assessments will inform next steps and help to identify children who need early intervention.

All staff use the Kings Road calculations policy to determine the methods used to teach mathematical concepts. It has been recently updated and is available to view on request.

### Organisation of classes.

#### Foundation Stage:

Nursery and Reception pupils at Kings Road are taught Maths using White Rose Maths, which is supplemented with Master the Curriculum, in accordance with the Statutory Framework for the Early Years Foundation Stage. This has been implemented from September 2014. This involves providing pupils with opportunities to develop and improve their skills in counting, understanding, and using numbers, calculating simple addition and subtraction problems; and to describe shapes, spaces, and measures. A cross-curricular approach is used as well as discrete Maths sessions as appropriate. Early Years teaching allows children to embed themselves in mathematical thinking throughout each of the areas of continuous provision. Both Nursery and Reception classes have unlimited access to their own outside classroom.

#### Key Stage 1:

All pupils in KS1 are taught in classes and have a one hour dedicated session of Maths. In Year 1, pupils are taught in mixed ability classes.

In Year 2, pupils begin the academic year in mixed ability groups. All classes have a Teaching Assistant to support learning. Often, the assistant will withdraw a group to give extra support under the direction of the class teacher.

#### Key Stage 2:

Pupils in KS2 are taught Maths in a dedicated lesson for one hour.

Cross-curricular work such as science and technology are used to help support the relevance of Maths in daily life.

Years 3 and 4 are set into one set of more academic pupils and two mixed ability sets. At Kings Road we firmly believe that children of all ages can learn through quality first Maths sessions and then, if required, access additional support through clear, purposeful interventions led by teaching staff. As such, we feel that teaching children in mixed ability groups will enable those who are less confident in their Maths ability to engage in quality Maths conversations with their peers.

We do however have children who are exceeding their age-related expectations. As a result, we provide more opportunities for them to deepen their understanding on a wide range of mathematical concepts. Teachers plan collaboratively, and all classes within a year group will work towards the same age-related expectations.

Years 5 and 6 are streamed across Maths and English, to maximise the impact of the specialisms of teaching staff.

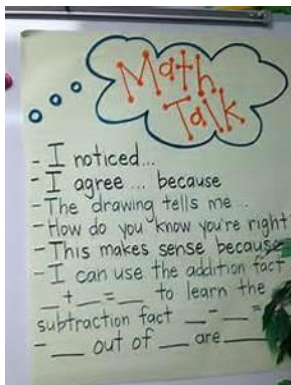
Mixed ability classes have the support of Teaching Assistants who work with pupils under the direction of the class teacher. Teachers are encouraged to ensure that Quality First Teaching is a priority in planning.

Planning and assessment is shared with all Teaching Assistants across the key stages to enable to impact positively on pupils learning at every opportunity.

Using a bespoke sophisticated assessment program, pupils, throughout school, are identified for additional support and are taught in small groups that enable them to keep up, rather than catch up. These groups are flexible, and pupils are targeted as necessary.

### What is Mathstalk?

Mathstalk is an approach to teaching and learning Maths which is based on talk and discussion. It asserts that Maths learning is taken in more when children are given the chance to explain their reasoning and describe different skills and processes. There are opportunities for children to internalise mathematic skills and concepts using oral retelling and actions. They then talk. Talk has been shown to develop mathematical understanding significantly:



As talk is the focus of this initiative, the Mathstalk strategy then breaks down into three main approaches.

### How does Mathstalk look?

There are three key elements of our Model that we implement:

#### *1. Using oral retelling and actions to internalise mathematical terms and skills:*

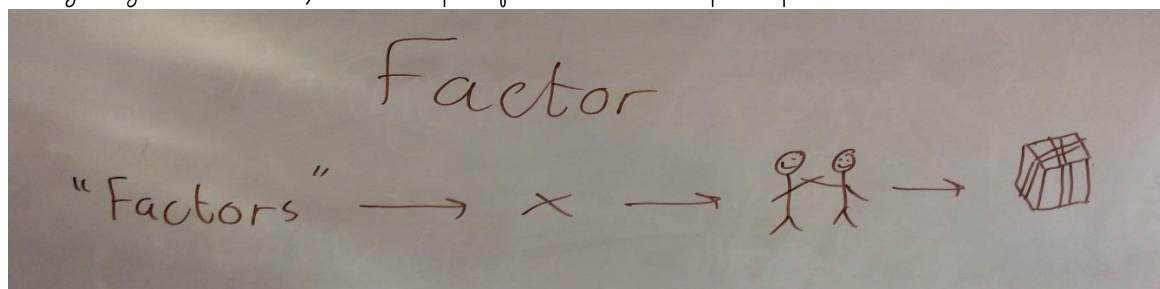
This is the part of Mathstalk which draws from Talk4Writing in a similar way. The children are encouraged to internalise mathematical skills and terms using mnemonics and actions to improve their memory of them. As a school we developed universal actions which all staff could use:



What you see above is the action for 'multiply'. Teachers use further examples of this in the 'Action Dictionary' on the T Drive under 'Mathstalk'.

#### *2. Creating 'concept maps' to show step-by-step understanding:*

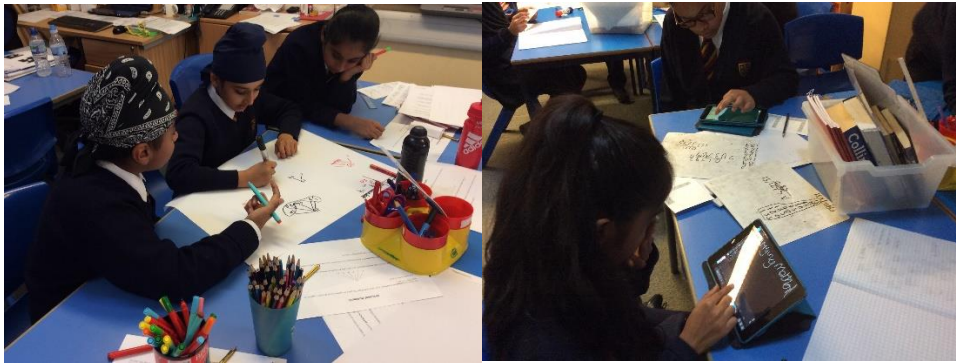
The fluency developed from oral retelling and actions is then built on by children developing concept maps to help them break down skills and concepts and visualise them. They can create the concept maps, talk through them with their peers and even create other types of 'concept maps' such as tutorials (an example is when we created Long Division tutorials on Explain Everything on the iPads). An example of a written concept map can be seen below:



#### *3. Special 'Mathstalk' sessions which involve problem solving, talk and informal recording on sugar paper.*

One of the most important stages of the Maths teaching at Kings Road is to empower staff to involve AT LEAST once a fortnight a session dedicated to problem solving and talk. Of course it is preferred to include elements of this in all sessions, but this session is special. It is out of books on a more informal style of recording, whatever that may be, and provides ALL the

opportunity to discuss and tackle problems using the skills they have developed up until that point.



### The 'Calculation Cape'

Our curriculum has four core principles. Concrete, Pictorial, Abstract, and Explain. These principles are focused on and celebrated bi-weekly through our 'Royal Retrieval' sessions, and in our celebration assembly. Certificates and a 'Calculation Cape' are awarded to the children who can best demonstrate mathematical reasoning using one of the four core principles. These opportunities to recall knowledge help consolidate children's understanding of prior learning, while also giving the teacher a chance to assess knowledge in a low stakes environment.

### Curriculum Impact

In Early Years, assessment is an ongoing process. Each child is assessed at the end of every topic. This enables staff to act decisively in supporting the needs of each child to ensure they progress well.

Formal Assessments take place towards the end of each term, which are based on the children's learning, using the White Rose assessment tests. These are recorded on MAGs and T&P grids and progress is discussed with the HT and DHT at individual teacher meetings. Progress of pupils is regularly discussed at Key Stage meetings. Data collected is used to monitor and predict progression of individuals and recorded for the end of year expectations. Teachers also have access to White Rose end of unit assessment material, which is based on the knowledge most recently learnt, and they may use this, at their discretion, to assess pupil's development, understanding and progress. These tests are also frequently used at the start of a topic to assess pupils' prior learning which then informs planning.

Attainment reached is recorded in relation to age-related expectations. It is recorded as *working below, emerging, working just below expected, expected, working just above expected, greater depth, and mastery*, which is in with whole school reporting.

### Books

Pupils in KS1 work in Maths books with 1cm squares whilst pupils in KS2 use 7mm squares. All work is dated, and the intent is clearly written and underlined. All work is carried out in pencil. Homework is set regularly in line with Kings Road homework policy and stored in plastic folders.

All work is marked regularly in line with the marking policy that works across both KS1 and KS2. Work is assessed as the children are completing it. This 'in the moment' marking allows adults to have consultations with children that not only support their learning, but allow them to deepen their understanding by using the key principles to demonstrate knowledge. This also builds self-efficacy, self-awareness and the ability to reflect.

In years 4 - 6 children write an impact statement at the end of each lesson to show their understanding of the concept that has been taught.

### Resources.

Classrooms have supplies of basic Maths equipment. In addition, further specialist topic equipment is available and stored about school.

All staff have access to the T-Drive via their laptops. This gives access to all plans and assessment material. The Maths file also contains an extensive library of resources for teaching and learning.

Years 3-6 have access to an online learning library. This library gives them the opportunity to practise the most challenging concepts in their year group.

All children from year 2 have access to Timestable Rockstars. This online resource that can be used at home to support the learning of multiplication and division facts. A login will be supplied to each child by their teacher.

### Parents.

Parents receive annual reports on the progress of the pupils. Two parents' evenings are held each year where progress is discussed. Teachers will arrange additional meetings with parents to discuss concern as is appropriate. We also encourage staff to share children's achievements in Maths sessions through other means, such as digital communication and verbal interactions.

This policy will be reviewed annually by the Head Teacher and Maths subject leaders. Recommendations for further action and improvements will be acted upon as appropriate.

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