

# **KINETON GREEN PRIMARY SCHOOL**

## **MATHEMATICS POLICY**



May 2020  
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## Introduction

Mathematics is a creative and highly interconnected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

At Kineton Green, we believe that all children should leave our school with a mastery of the substantive maths knowledge as set out in the National Curriculum, but also the disciplinary knowledge of how to apply their understanding to solving real-world maths problems.

***All children should see themselves as “mathematicians” and feel confident in their abilities to use maths to explain, predict and represent events and tackle everyday problems.***

The aims of our maths teaching are aligned with the aims of the National Curriculum: **fluency, reasoning** and **problem solving** both in our mathematics lessons and across the curriculum. We recognise that pupils need to learn basic number facts and acquire fluency in procedures, alongside developing conceptual understanding if they are to be able to solve increasingly complex problems in life and later in the workplace.

## Our Intent Statement

### Intent

At Kineton Green ***‘Our intent is to create a safe, enjoyable and exciting community in which every person is valued and encouraged to explore their potential in an infinitely changing world.’*** (Intent Statement). Our intent

statement is at the heart of our maths curriculum, where we aim for all children to make individual progress, enjoy success and be equipped to use mathematical skills and knowledge in life after school. We aim to challenge all pupils appropriately and also use supportive tools where needed such as additional resources, scaffolding and intervention.

Whilst teaching maths at Kineton Green, we strive to implement our 'five bees' within the mathematics curriculum. Our 'five bees' include: **'being safe and healthy', 'being respectful', 'being confident', 'being trustworthy and honest' and 'being a lifelong learner'**. In particular, when teaching maths we highlight learning mathematical skills and solving problems that will equip the pupils to become lifelong learners. We model that making mistakes can be useful learning opportunities and at the heart of this is being trustworthy and honest. Finally, we enrich the pupils in experiences that will develop the pupil's confidence when applying mathematical knowledge in lessons and real life.

### Implementation

At Kineton Green, maths is taught through good quality first teaching, enriched experiences and purposeful learning through explicit links to our school values. Pupils will build upon skills they have learnt in previous years, whilst teachers will set challenges where needed and identify next steps. Questioning, resources, key vocabulary and key mathematical models, will be used consistently throughout each pupil's time at Kineton Green to ensure transitions between each year group is smooth and progress is made effectively.

### Impact

In turn, every child should make good or better progress from their individual starting point. Every child should experience success in maths regularly, to ensure confidence and enjoyment is developed and that they are equipped with maths skills to support them in life after school and to be lifelong learners.

## Teaching and Learning

***We use the EYFS and National Curriculum Frameworks as a basis for our curriculum content alongside a Maths Mastery approach to teaching and learning across the school.***

At Kineton Green we teach for mastery, this means that all children are taught one set of mathematical concepts and the big ideas in mathematics. Lessons are carefully crafted in order to allow all pupils to access these concepts and ideas and explore the rich connections between them. We have high expectations of our pupils and strive to make the mathematics curriculum accessible but challenging to all. Pupils will move through the programme of study at broadly the same pace. We recognise that all children need a deep understanding of the mathematics they are learning in order that future learning is built upon firm foundations. Learning from teachers in Shanghai and Singapore, we have adopted same day 'on the spot intervention' sessions and additional practice to prevent children falling behind.

Aspects of mathematics teaching at our school:

- Planned lessons ensure coherent, small steps through learning
- Learning is through a concrete-abstract-pictorial approach
- Misconceptions and difficult points are pre-considered and planning allows for these to be explored and addressed
- Teachers carefully choose representations which expose the structure of the mathematics
- Skilful questioning is embedded throughout lessons
- Children that grasp a concept rapidly will be sufficiently challenged through rich and sophisticated problems requiring them to apply their skills deeply
- Precise mathematical language is used in both oral and written discussions/explanations
- Mathematical fluency is embedded and reinforced from the Foundation Stage onwards through half-termly Key Instant Recall Facts (KIRFs) and daily fluency sessions for all year groups.

## Implementation

In the Foundation Stage pupils will be able to experience mathematics on a daily basis. This early introduction to mathematics will generally be undertaken orally and practically and often in the context of a class theme e.g. a particular story or a nursery rhyme. Wherever possible, opportunities for spontaneous mathematics should be exploited e.g. when counting equipment in and out, taking the register and so on. Foundation staff will liaise with the mathematics co-ordinator to ensure the necessary concepts and skills are introduced and that there is continuity and progression throughout. This delivery will be supported by: The Statutory Framework for Early Years Foundation Years the Curriculum Guidance for the Foundation Stage (2017), Development Matters in the Early Years Foundation Stage (EYFS) (2012) and other available teaching resources.

In early Key Stage 1, practice will initially reflect that of the Foundation Stage, transitioning/developing into a daily mathematics lesson of approximately 60 minutes with a break time in between. These lessons will mostly follow the lesson structure of a 30-minute input/ interactive learning experience, a 15-minute break time and a subsequent 30 minutes to apply learnt skills in a variety of contexts and complete independent work. All pupils in Key Stage 2 will also have a daily mathematics lesson of approximately 60 minutes with a break time in between, mostly following the same lesson structure as Key Stage 1.

Whole class Mathematics lessons will be taught in the morning unless the timetable prevents this with “split lessons” across the morning break time strongly encouraged in KS1 and KS2. There will also be a daily fluency session directly after lunch which will last around 10 minutes.

## Planning

We use the EYFS and National Curriculum Frameworks as a basis for our curriculum content and a 'Maths Mastery' approach to teaching and learning across the school. From FS2 to Year 6, this is supported by following the Power Maths scheme of work, with additional materials from White Rose and the NCETM Spine Materials.

It is the responsibility of the mathematics co-ordinator to ensure that each teacher is provided with a long-term plan and medium term plans – available from Power Maths. Each class teacher is responsible for writing short-term plans for units of work in consultation and with guidance from the mathematics co-ordinator.

At Kineton Green Primary School, school teachers are expected to plan using the guidance and objectives set out in the Mathematics programmes of study: key stages 1 and 2 National Curriculum in England and The Statutory Framework for Early Years Foundation Years the Curriculum Guidance for the Foundation Stage (2014) and Development Matters in the Early Years Foundation Stage (EYFS) (2012) alongside long and medium term plans from Power Maths and White Rose. Teachers are expected to provide short term plans using the school's short term maths planning pro forma. This planning sheet should be saved on the school network a minimum of every two weeks. These plans will detail the focus of the lesson, the initial anchor task that will be provided, the stem sentence and key vocabulary of the lesson, the "tricky bits" (expected misconceptions and how they will be addressed), the plenary and the 'additional to' and 'different from' that will be implemented to support children's learning (see the school's Inclusion policy for more information).

In the Foundation Stage this planning will be in the form of continuous provision activities and teacher-led small group activities.

When selecting objectives, it is important to consider relevant links between them. It may not be possible to cover all the objectives in the yearly teaching programme. If this is the case it is important to prioritise; it will be more effective to cover the majority of the objectives well than to skim over all of them. The medium term planning grids give a suggested number of days/weeks for each unit of work. It is important to use these as a guide to

ensure that the children are receiving a balanced mathematics curriculum and that topics are visited half term (KS1) or term (KS2). However, adjustments may need to be made following assessment of learning and children's needs.

Fluency sessions will be planned based on the current Key Instant Recall Fact focus for that class and/or ongoing teacher assessment, plus providing an opportunity to revisit KIRFs learnt in previous terms and school years. The focus for each daily session is noted on the maths short term planning sheets and should be met through interactive songs, games and activities over formal instruction where it is appropriate to do so.

### Learning Environment

The classroom environment should be mathematically rich and support the current learning of the class. Mathematical working walls are to be clearly displayed in every classroom with key vocabulary and visual prompts. These should be interactive wherever possible and should be updated regularly to suit the curriculum coverage and the needs of the pupils. The "Stem Sentence" for each lesson should be displayed clearly and referred to during the lesson.

The creation and effective use of flipchart slides for the interactive whiteboard is recognised as highly valuable and are expected to be used in most if not all maths lessons to aid learning and experience. Concrete and visual resources required for the lesson should be prepared in advance with all students able to access them easily when required.

## Assessment

Maths books provide evidence of progress, along with teacher assessment notes/verbal contributions. Assessment is an ongoing process in the classroom which forms the basis of future action for planning and delivery of lessons. Formal and informal teacher assessments are based upon the practical, written and oral work completed by the children. Detailed summative assessments take place at the beginning and the end of each term. These are in the form of termly White Rose Arithmetic and Reasoning tests. The tests are provided initially to provide a baseline to inform the teacher of individual and cohort strengths and areas for development – teachers are expected to be aware of this information and to use it to inform their planning and intervention work. These tests are also analysed in order to support end of year teacher assessment judgements and to inform future planning and whole school development, including the professional development of staff members.

Short Key Instant Recall Fact assessments also take place at the beginning and end of each half term. Progress is recorded on the SIMS tracker and children who are identified as needing extra support have relevant information sent home / their parents are liaised with in order to provide this.

## Inclusion

In line with NCETM guidance on the teaching of mathematics, we recognise that, *'There is no such thing as 'special needs mathematics' or 'gifted and talented mathematics'. Mathematics is mathematics and the key ideas and building blocks are important for everyone.'* However, a child who is assessed to have special education needs will, wherever necessary, have specific maths targets on an inclusion plan, individual to them, produced by their class teacher and will receive further support with their learning in order to meet these targets and close gaps in their knowledge and understanding.

Work in mathematics follows the whole school policy on equal opportunities. Lessons are planned with activities to appeal to all individual children, regardless of gender, races, religions, cultures and abilities.

Kineton Green School values all pupils and celebrates diversity of experience, interest and achievement. We believe that all children have a common entitlement to a broad and balanced academic and social curriculum. In keeping with our ethos and 'Five Bees' we believe that all children should be equally valued in school and strive to develop in an environment where all children can flourish.

This does not mean that we treat all children the same way, but will respond to each in ways which take account of their varied life experiences and needs. In line with the Special Educational Needs and Disabilities Policy staff will, using assessment, take into account pupils' strengths and barriers to ensure that learning opportunities are purposeful for all via the use of 'additional to' and/or 'different from' provision.

Refer to Special Educational Needs and Disabilities Policy for further details.

### Homework

Weekly maths homework tasks are set from Years 1 to 6. These tasks should directly reflect the work which has taken place in school that week, unless it is a revision of previous work. These homework tasks are written in a way that is informative to parents/carers and encourages parent/carer and child engagement together.

Parents/carers are encouraged to sign and make brief notes in the homework book in order to inform the teacher of how the child got on with the work. This is an opportunity to request further support on this topic if necessary. Homework books are collected, checked and marked weekly (as per the marking policy).

Half termly Key Instant Recall Facts (KIRFs) are also given out at the start of each half term, these include a range of activity ideas (both general and interactive) to encourage children to build their fluency of these key facts.

All children from Year 1 – 6 are provided with a Times Table Rockstars login and relevant information on how to successfully access this. Children are encouraged to engage with this times table practise regularly and their progress is monitored by their class teachers and school maths coordinators.

Children making exceptional progress are rewarded with certificates or stickers in a whole school “achievers” assembly.

### Resources

Each classroom has a range of general mathematical equipment (e.g.: base ten, counters, counting stick, etc.). A wide range of shared resources are available in the Maths drawers located between the Year 2 and 3 classrooms and outside the Year 5 classroom. It is expected that resources are returned to their original place after each use. It is the responsibility of the maths coordinator to regularly check the stock of resources and subsequently place orders when necessary to ensure the maintenance of a range of high quality resources within school.

### Expectations for presentation in pupils’ books:

- Write the short date using the format DD.MM.YY and underline using a ruler.
- Glue all sheets in straight, without going over any of the edges of the book (neatly folded once if they do not fit).
- Always use your best handwriting (using pencil only).
- Follow the “1 number – 1 square” rule at all times!
- Copy the example from the whiteboard or worksheet then follow the example in your own work.
- Write the question number in the margin and leave one line between each question.
- Complete any “gap” tasks and respond to any comments appropriately.
- Can you make your work even better?
- Use the 6 B’s for help if you are stuck.
- Margin on the left-hand side (2 squares from the left, using a ruler and a sharp pencil). ***(This final bullet point is for Key Stage 2 only).***

**Maths Non-Negotiables 2020-21**

	<b>Teaching &amp; Learning Expectations</b>	<b>Outcomes</b>	<b>Monitored?</b>
<b>Fluency</b>	<ul style="list-style-type: none"> <li>• Daily 10 minute fluency practise – developing rapid recall of key number facts.</li> <li>• Half termly KIRF practised at least 3 times each week, plus revision of known facts.</li> <li>• Half termly KIRF assessments for all pupils. Additional support provided to children who are not secure.</li> <li>• Fluency chants which reinforce KIRFs are used during daily lessons and transitions.</li> <li>• Assessments should be kept using the excel spreadsheet to track each child’s progress within number bonds and times tables.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupils are able to recite key number facts using instant recall techniques.</li> <li>• Half termly KIRFs memorised by all pupils (additional support provided if not met)</li> <li>• Children make fewer fluency errors in end of term assessments.</li> </ul>	Data analysis Progress meetings Lesson obs Learning walk
<b>Mastery</b>	<ul style="list-style-type: none"> <li>• Daily numeracy hour including teacher input + opportunities for independent practise.</li> <li>• Key vocabulary introduced at start of each topic and evidence to be shown that they know what each word means through showing an isolated example in their book.</li> <li>• Key vocabulary for each lesson is on display and discussed explicitly with all pupils.</li> <li>• Concrete materials to develop understanding are selected by the teacher to model key concepts. Pupils are given ample opportunity to use concrete materials to develop their understanding.</li> <li>• Visual representations of the model are used on the Interactive Whiteboard or through other means and are used by pupils to model their answers.</li> <li>• Working walls should reflect the learning taking place and should include key resources, key models and key vocabulary. They should show the learning journey and be mainly composed in real time (within lesson), so that pupils can relate to it.</li> <li>• Use of “cold calling” is embedded in the lesson, all children are expected to answer questions, not just those who know the answer! A child can say they don’t know, but then will be expected to respond once an appropriate answer has been provided.</li> <li>• Pupils are encouraged to answer questions using full sentences and use appropriate mathematical vocabulary (Stem Sentences are consistently used to promote this).</li> <li>• Steps to Reasoning displays visible in classrooms and used as a model to deepen reasoning answers.</li> <li>• Children who are not yet secure in their understanding are identified within the lesson and work with teacher or TA during the independent task to develop their understanding. Sticky tabs are put into books to indicate where further intervention is required for children to be “secure”.</li> <li>• Discussions should take place to ensure children understand why they are learning each topic/objective and how this will help them in real life contexts.</li> <li>• Differentiated questions should be used on flipcharts to ensure all children are challenged.</li> </ul>	<ul style="list-style-type: none"> <li>• Children will receive high-quality teaching across the full maths curriculum and opportunities to develop their understanding in group, paired and independent tasks.</li> <li>• Children will achieve the ‘expected’ standard or ‘greater depth’ unless there is a specific learning barrier preventing them from doing so.</li> <li>• Children develop greater depth of understanding through use of concrete-pictorial-abstract (CPA) approach.</li> <li>• Children will be involved in the lesson and will be able to explain their understanding using appropriate vocabulary.</li> <li>• Children deepen their understanding through use of “Steps to Reasoning” model.</li> </ul>	Planning scrutiny Folder scrutiny Progress meetings Lesson observations Assessment and tracking Environmental check

<p style="text-align: center;"><b>Assessment and Planning</b></p>	<ul style="list-style-type: none"> <li>• The objectives from the White Rose Maths Hub medium term planning is used by all year groups.</li> <li>• Baseline assessments are carried out for all pupils at the start of each term using White Rose Maths Hub assessment materials (at appropriate age level unless identified as having a specific learning need which prevents this).</li> <li>• All papers are marked by class teacher and data is entered onto spreadsheets by admin staff within first 2 weeks of each term. Teachers make notes of areas of strengths and weaknesses of each cohort to inform planning for the term.</li> <li>• The planning clearly reflects the evidence from the assessment data.</li> <li>• These assessments and PUMA are then re-taken two weeks before the end of each term and data recorded on the spreadsheets. Areas of less than expected progress are planned for and re-taught in last week of term.</li> <li>• Assessments are retained for following class teacher to use as baseline.</li> <li>• Through marking and assessment in the classroom, where a child is showing gaps in their understanding, staff must intervene as soon as possible to minimise further misconception.</li> <li>• If a child cannot access the learning, this must be brought to the attention of the maths coordinator and the SENCO to discuss further provision and possible 'different from'.</li> <li>• All planning sheets should include: a scaffold, a core task, a greater depth activity</li> <li>• Teacher inputs should include identifying pre-empted misconceptions (tricky bits), where children get time to discuss the error</li> <li>• Reasoning lessons should be taught in FS, Key Stage 1 and 2 regularly to develop their understanding of how to answer questions in this form.</li> <li>• Problem-solving lessons should be taught regularly</li> </ul>	<ul style="list-style-type: none"> <li>• Accurate assessment data is collected for all children and individual and cohort weaknesses are identified.</li> <li>• Areas in which the cohort show less than secure understanding are used as a basis for planning lessons which are designed to address misconceptions and develop greater depth of understanding.</li> <li>• Individual children making less than expected progress are identified and interventions are put in place to close these specific gaps.</li> <li>• <b>Areas of progress are highlighted and praised!</b></li> </ul>	<p>White Rose Assessment Data Planning scrutiny Profile scrutiny Progress meetings Lesson observations Assessment and tracking Environmental check</p>
<p style="text-align: center;"><b>Home Learning</b></p>	<ul style="list-style-type: none"> <li>• Half-termly KIRF shared with parents through homework book and activities provided to support this at home.</li> <li>• Informal feedback provided of children's progress against KIRFs by class teacher.</li> <li>• Weekly homework to consolidate the week's learning – if a particular model of learning is required, this is made explicit on the homework.</li> <li>• Parents comment on their children's understanding in the homework books.</li> </ul>	<ul style="list-style-type: none"> <li>• Parents are involved in the children's learning – writing comments in the children's diaries.</li> <li>• Parents attend workshops.</li> </ul>	<p>Parental feedback</p>