



Maths Policy

Core Values

Readiness

Resilience

Respect

School Values

Independence

Ambition

Compassion

Co-operation

Initiative

Enjoyment

Responsibility

Confidence

Celebration

Kindness

Honesty

Individuality

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Review:

Introduction

At Kender Primary School we believe that mathematics equips pupils with a uniquely powerful set of tools, and develops an ability to calculate, reason and solve problems. It enables children to understand and appreciate relationships and patterns in both number and space in their everyday lives. We believe that maths should be purposeful and children are made aware of its importance in real-life contexts. Through their growing knowledge and understanding, they also learn to appreciate the contribution made by many people to the development and application of mathematics.

Rationale

It is our aim to develop:

- A growth mindset towards the subject of mathematics
- A positive attitude towards mathematics
- Learners who are resilient and embrace challenge
- A secure foundation of number fluency from EYFS to Year 6
- Competence and confidence with numbers and the number system and other mathematical knowledge, concepts and skills
- Mastery in mathematics – learners who can reason, think logically and work systematically to solve problems, both independently and with others
- Learners who can communicate using sophisticated mathematical language

Our practice

Teachers' planning and organisation

At Kender, we have adopted the White Rose Maths Hub programme of study to support our staff with the teaching and learning of mathematics. The programme provides planning support and termly assessment materials for EYFS up to Year 6. As well as a whole school plan for the academic year (this provides a clear, consistent plan for maths over the year), each year group is provided with a termly overview and both week-by-week and lesson-by-lesson breakdowns. In addition to this whole school programme of study, teachers also use Primary Advantage, which is a programme of study intended to supplement support for teaching staff.

It is understood that, within a unit of work, the time spent on teaching a specific learning objective or set of learning objectives depends on the needs of the children in the class.

The structure of maths lessons may vary, depending on the nature of the topic and the activity planned. In order to ensure effective teaching and learning is part of every lesson, teachers use the document 'Teaching and Learning Maths at Kender: Lesson Guidance' (See Appendix 2).

Where possible teachers pre-empt 'big' misconceptions that many children will have – eg a rectangle/oblong has four lines of symmetry (diagonals). Teachers also plan which vocabulary they will use and which models, images and concrete resources they will use to aid learning.

Effective plenaries are only part-planned as misconceptions only arise during the teaching of the lesson. However, all plenaries refer to the learning outcome and the success criteria in a meaningful way, allowing the children some time for self-assessment.

We ensure that across each term children are given a range of experiences in mathematics lessons eg practical activities and mathematical games, group problem solving activities, individual, group and whole class discussion activities, open and closed tasks.

We ensure that children can use a range of methods to calculate and have the ability to check whether their chosen methods are appropriate, reliable and efficient.

A detailed calculation policy, based on the White Rose Maths Hubs programme of study, is used throughout the school to ensure continual and graduation progression of number and calculation skills (See Appendix 1).

Concrete, Pictorial, Abstract (CPA) Approach

At Kender, children learn mathematics through the 'concrete, pictorial, abstract' approach. As shown in the Calculation Policy (appendix 1), children will use first physical objects to represent mathematical concepts before moving to pictorial representations, and finally abstract representation (ie numerical symbols).

Teachers model different ways of representing solutions to a problem in order to develop children's conceptual variation and reasoning skills. Children should be encouraged to move between these different stages (sometimes returning to concrete or pictorial) in order to fully understand a mathematical concept.

Differentiation

Our staff have high expectations of all children, irrespective of ability, and encourage them to be successful and achieve their full potential. Our aim is to ensure challenge for all.

Children are encouraged to have a growth mindset about their ability to do mathematics.

Encouraging children to 'have a go' is seen as paramount. We aim to develop the mantra that: 'it's okay to be stuck because it is fantastic when you get unstuck!' In some lessons, children 'self-differentiate' and choose the level of challenge right for them. In other lessons, teachers direct children to the correct level of challenge based on their assessment in the initial phases of the lesson.

The differentiation of tasks is done in various ways:

- Open ended questioning and activities which allow more able children to offer more sophisticated mathematical responses
- Stepped Activities which can be accessed at different steps, supporting and challenge all
- Recording eg allowing some children to give verbal responses and photographing their learning
- Resourcing eg Use of cubes, 100 squares, number lines, mirrors to support some children
- Grouping according to ability so that the groups can be given different tasks when appropriate. Activities are based on the same theme.

Part of independent work often involves some focused, targeted group work from the teacher. However groupings are 'fluid and flexible' based on the children's performance in a previous lesson or the beginning of that particular lesson.

Where members of support staff (HLTAs and LSAs) are available, they are fully briefed before the lesson and use the same teaching methods modelled by the teacher to support individuals or groups. In some cases they may also model concepts to the class allowing the teacher to assess particular groups of children in more detail and identify their next steps.

Maths in EYFS

In the Early Years Foundation Stage, maths is taught holistically through play, based upon the children's interests and class topics. The Early Years team work in two ways to ensure coverage of all areas of maths

in Development Matters. Firstly, there will be carpet sessions where groups of children focus on particular topics, with this learning continuing with a couple of children at a time or in small groups. Secondly, the team will also explore mathematical concepts through planning in the moment and seeking on-the-spot opportunities to teach maths. As the children progress through Early Years, children will learn to record their learning in more formal methods. This is so that the children are more prepared for the more formal learning that will take place in Year 1 and beyond.

Special educational needs

Children with SEN are normally taught within the daily mathematics lesson. When additional staff are available to support groups or individual children, they may withdraw small groups to use intervention materials.

Within the daily mathematics lesson, teachers not only provide activities to support children who find mathematics difficult, but also activities that provide appropriate challenges (eg more open-ended investigations and in-depth reasoning tasks) for children who are high achievers in mathematics.

Equal opportunities

All children should have equal access to the curriculum, irrespective of particular circumstances such as race, background, gender and capability. In the daily mathematics lesson we ensure this by supporting children in a variety of ways: eg repeating instructions, emphasising key words, using picture cues.

Vocabulary and precision of language

Developing children's language and vocabulary is absolutely essential.

- In all lessons, attention is given to whether key vocabulary has been learnt.
- Key vocabulary is listed on vocabulary cards during lessons and instantly added to as new words arise. These should be displayed on 'working walls' throughout the unit and beyond if relevant.
- Paired talk activities are used to encourage children to talk about their mathematics.
- Teachers insist that children mirror the language they hear the adults using.
- Teachers encourage more sophisticated and proper vocabulary from the children. Eg Child says, 'you have to times the numbers', adult says, 'do you mean you have to multiply the numbers?'

- Where appropriate, children are encouraged to answer in full sentences.
- Adults mirror back alternative words for the same meaning to enrich children's range of vocabulary. Eg Child says '3 times 5 is 15', teacher says, 'yes, the product of 3 and 5 is 15' or '3 multiplied by 5 equals 15'.
- Children are required to provide justification and reasoning for their answers. For example, 'I know the shape is a square because....'
- Teachers are required to have sound subject knowledge and understanding of the correct terminology and vocabulary eg there is no such thing as a 'take away' sum (because 'sum' means 'add'). We use the terms 'calculation' or 'equation'.

Working walls

All classrooms have a clear working wall where models, vocabulary and visual images used in previous lessons are displayed and referred to. Children use these to support their learning.

Cross-curricular links

Throughout the whole curriculum, opportunities exist to extend and promote mathematics. Teachers seek to take advantage of all these opportunities within our topic-based curriculum.

Pupils' Record of Work

There are occasions when it is both quick and convenient to carry out written calculations. It is also important to record aspects of mathematical investigations. Children are taught a variety of methods for recording their work and they are encouraged and helped to use the most appropriate and convenient method of recording.

All children are encouraged to work legibly when recording their work. When using squares, we encourage children to use one square for each digit.

In each child's book, learning should be recorded at least 3 times per week in order to effectively track progress and obtain evidence for assessment.

Marking

The quality of marking is crucial. All work is marked to show the children where they have succeeded and where errors have been made. At least once a week, teachers mark in detail, celebrating the successes

made within a piece of work, picking-up on some misconceptions/ errors and using next steps to provide some examples for further challenge.

When appropriate the children themselves can mark exercises, which involve routine practice with support and guidance from the teacher.

Please refer to the Feedback and Marking Policy for further detail.

Homework

It is our school policy to provide parents and carers with opportunities to work with their children at home. Homework set can be invaluable in promoting children's learning in mathematics.

Homework at Kender consists of projects, based around the child's current topic, and the child will be given a longer period of time to complete the tasks which are set for them. From time to time, these projects could be maths-based, eg achieve a silver award on Mathletics. More detail on homework procedure can be found in the Kender Homework Policy.

Each child at Kender is provided with an account for Mathletics, which the children should be encouraged to access regularly at home to consolidate their knowledge of mathematical concepts. Teachers have the ability to set tasks on Mathletics which the child will have to complete when they sign in to their accounts.

Assessment

On-going assessment for learning

The learning objective (and the success criteria) are referred to during the lesson to gauge progress and at the end of the lesson to assess progress. The learning objective (and the success criteria) should be visible throughout the lesson to ensure the children have clarity of the learning focus.

In order to develop independence and ownership of learning, children are expected to self-assess themselves against the learning objective and success criteria using a traffic light system, identifying what they have done well and how they could improve.

Teachers monitor and assess children throughout the lesson, and through marking their work, identifying any misconceptions that need to be addressed.

Record Keeping

Teachers use their own short assessment tasks at the end of units. The work set, combined with a scrutiny of children's recorded work over the previous weeks, helps to review how well children have taken in the topics taught and identifies any remaining misconceptions.

Termly assessments using a problem solving activity can also be used to assess using and applying skills, inform planning and identify learning gaps.

Formal Assessment

The use of GL Assessments has been adopted to enable the teaching staff to gain a more detailed and accurate picture of each child's current level of attainment. Each child will complete two tests – one at the beginning of the Autumn Term; the second in the Summer Term – and these will provide evidence to show the progress of each child at Kender throughout the academic year.

This information will inform pupil progress meetings and planning for the upcoming academic year.

Arbor

Teaching staff use the Arbor assessment tool to maintain a clear picture of each child's attainment and learning gaps. Assessment information on each child is regularly updated (at the end of each unit of work). This allows both the teaching staff, the subject lead and the senior leadership team to monitor progress across year groups and the whole school.

Reporting to Parents

Parents are given the opportunity to discuss their child's progress on three official occasions but understand that the school's 'open door' policy enables them to address concerns throughout the year. Reports are completed before the end of the summer term.

Teachers use the information gathered from their assessments to help them comment on individual children's progress.

Number Fluency

A key objective at Kender is to develop and secure fluency of number in each child. Having a good working memory and fluency of number

is vital in order for children to be able reason effectively and achieve mastery in mathematics.

One of the three aims of the new curriculum states that pupils will: “become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.” Teachers at Kender use The Kender Number Passport in order to plan teach and monitor the progress made by each child with regards to their fluency in number.

The Kender Number Passport

This document includes all of the number facts that pupils are required to know in each year group. Each child in the school will be provided with a Number Passport and it will stay with that child as they progress through the school. It will not go home with them. However, the document will be discussed when the class teacher meets with the parent/carer as a way of looking at progression and putting further support in place for the child. An example of this document can be found in Appendix 3.

Monitoring and Evaluation

The mathematics subject leader is given opportunities to work alongside other teachers. This time is used to monitor and evaluate the quality and standards of mathematics throughout the school and enables the subject leader to support teachers in their own classrooms. This may be done through:

- Lesson observations
- Checking of marking and progression in children's books
- Checking of planning and lesson resourcing
- Liaising with teaching staff and offering guidance on planning and supporting the children in their learning

Opportunities for teachers to review the mathematics policy are given on a regular basis during staff meetings.

Role of the Subject Leader

- To take the lead in policy development
- To support colleagues eg leading staff CPD, planning support, team teaching

- To monitor and be accountable for progress in Mathematics – this may be done through scrutiny of work, observations and analysis of formal assessment data
- To take responsibility for the choice, purchase and organisation of central resources for Mathematics, in consultation with colleagues
- To liaise with other members of staff to form a coherent and progressive scheme of work which ensures both experience of, and capability in, Mathematics
- To be familiar with current thinking concerning the teaching of Mathematics, and to disseminate information to colleagues

The subject leader will report on mathematics to the Head teacher and will liaise with the named link governors.