Intake Farm Primary School: Mathematics Policy

Subject statement:

Mathematics is an integral part of a child's learning and development. It is essential to everyday life and is critical to ensure that children develop the suitable skills for future employment. Children acquire a certain range of tools from mathematics, such as: logical thinking, reasoning, fluency, problem solving and higher order thinking skills. These tools enable children to piece together different mathematical concepts and apply their knowledge to real- life situations. Maths is present constantly in our changing world, from money to measures to data handling. To give our future generation the best possible chance in life, an enriching and challenging maths education is vital to developing these key skills.

Intent:

These aims outline the goals for the teaching of mathematics at Intake Farm:

- To improve standards across the school in terms of teaching, learning, progress and attainment.

- To develop children's mental calculation abilities.

- To provide children with a wide range of experiences to increase their learning and development in maths.

- To link their learning to real life situations to show the relevance and importance of mathematical concepts.

- To teach children the skills needed to solve a range of mathematical problems and reasoning activities.

- To increase children's fluency with maths and equip them with efficient methods to solve calculations and problems.

- To challenge children's thinking within mathematics.

- To promote a positive attitude towards their maths learning.

- To support all with their learning and challenge them to the best of their ability.

Scheme of work

Since September 2021, we have been following the White Rose Maths scheme of work. We have moved towards this scheme as we believe that this approach ensures all children have the same opportunities to learn and the support they need to fully grasp concepts. The philosophy behind White Rose Maths also focuses on making maths fun for children and helping them to find enjoyment in number problems. The White Rose Maths approach

focuses on maths mastery — children are taught to fully grasp topics, not just scrape the surface, so by the time they move on to more advanced lessons they have a deep understanding of foundational concepts.

EYFS

Work undertaken within the Foundation Stage is guided by the requirements and recommendations set out in the Early Years 'Development Matters' EYFS document.

The Early Learning goal for Mathematics states:

Expected: Children count reliably with numbers from one to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.

All children are given ample opportunity to develop their understanding of mathematics. Lessons in the Early Years aim to do this through varied activities that allow children to use, enjoy, explore, practise and talk confidently about mathematics.

By the end of the foundation stage our children will be expected to be confident and competent in learning and using key skills. The areas of learning include:

- Counting
- Sorting
- Comparing / classifying
- Investigating patterns
- Estimate / measure
- Predict
- Making connections
- Recognising relationships
- Manipulating
- Recording
- Working with numbers, shapes, space and measures.

Mathematical understanding is also developed through stories, songs, games and imaginative play so that the children enjoy using and experimenting with numbers, including numbers larger than ten.

Pupils have opportunities to initiate their own mathematical learning through the use of engaging resources both inside and outside of the classroom. A balance of directed time, activity and detailed observations inform class teachers of the next steps for learning for individual pupils. This scheme has now been fully implemented and it is working effectively across the school from Year 1 to Year 6.

Key Stage 1

During key stage 1 pupils develop their knowledge and understanding of mathematics through practical activity, exploration and discussion. They learn to count, read, write and order numbers to 100 and beyond. They develop a range of mental calculation skills and use these confidently in different settings. They learn about shape and space through practical activity which builds on their understanding of their immediate environment. They begin to grasp mathematical language, using it to talk about their methods and explain their reasoning when solving problems.

During the key stage, pupils will be taught the knowledge, skills and understanding through:

- Practical activity, exploration and discussion.
- Using mathematical ideas in practical activities, then recording these using objects, pictures, diagrams, words, numbers and symbols.
- Using mental images of numbers and their relationship to support the development of mental calculation strategies.
- Estimating, drawing and measuring in a range of practical contexts.
- Drawing inferences from data in practical contexts.
- Exploring and using a variety of resources and materials, including ICT.
- Activities that encourage them to make connections between number work and other aspects of their work in mathematics.

Key Stage 2

During key stage 2 pupils use the number system more confidently. They move from counting reliably to calculating fluently with all four number operations. They always try to tackle a problem with mental methods before using any other approach. Pupils explore features of shape and space and develop their measuring skills in a range of contexts. They discuss and present their methods and reasoning using a wider range of mathematical language, diagrams and charts.

During the key stage, pupils will be taught the knowledge, skills and understanding through:

- Activities that extend their understanding of the number system to include integers,
- Fractions and decimals
- Approximating and estimating more systematically in their work in mathematics
- Using patterns and relationships to explore simple algebraic ideas
- Applying their measuring skills to a range of contexts
- Drawing inferences from data in practical activities, and recognising the difference
- Between meaningful and misleading representations of data
- Exploring and using a variety of resources and materials, including ICT

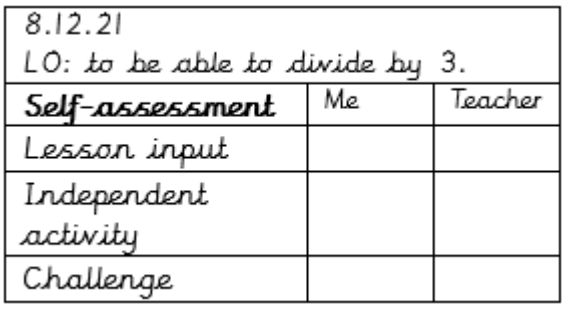
- Activities in which pupils decide when the use of calculators is appropriate and then use them effectively
- Using mathematics in their work in other subjects.

Implementation:

Planning

Planning is derived from the White Rose maths scheme and activities are taken directly from the scheme and adapted if necessary. Teachers should be planning oral/ mental starters, (Flashback activities) main activities and challenges which should incorporate some reasoning. Time for responding to previous marking should also be allowed for. In addition, stand-alone reasoning activities should be planned for on a weekly basis to allow children the opportunity to apply their learning in a theoretical or practical context. These lessons should be delivered across school on a Friday.

As shown below, after the oral/mental starter, children are required to complete the planned first activity. This is an activity that all children begin on, but can be accelerated onto further challenges if they have completed some of the first activity easily. Teachers are required to plan challenges to provide daily opportunities for children to reason and problem solve. If children finish these challenges, children may be given a next step to push their learning on even further. This can either be planned and prepared beforehand, or handwritten in books. All children have the chance to complete challenge questions, as usually this is their task during their responding to marking time, unless they have really struggled with the first activity and need adult support. Children are expected to reflect on their learning by using the self-assessment grid (as shown below).



8.12.21 LO: to be able to divide by 3.		
Self-assessment	Me	Teacher
Lesson input		
Independent activity		
Challenge		

As part of the White Rose scheme Teachers are provided with a long term plan outlining the topics for each half term. In line with school policy, paper copies of weekly planning do not need to be produced but short term planning is completed via PowerPoint presentations or Smart Notebooks in addition to White Rose planning if necessary. This planning should

continue to include starter activities, teaching input, independent activities, challenges, plenaries and teacher evaluations at the end of lessons.

Teaching and Learning

Mathematics contributes to many subjects and it is important the children are given opportunities to apply and use Mathematics in real contexts. At Intake Farm Primary we encourage staff to make cross curricular links where possible in order to provide meaning and context to the teaching. This will allow the children to gain an understanding of how mathematics fits in to everyday life and make connections with the real world. We endeavour at all times to set work that is challenging, motivating and encourages the pupils to talk about what they have been doing.

The children will all participate in a daily maths lesson. This should last approximately 45 -60 minutes in Key Stage 1 and about 60-70 minutes in Key Stage 2.
The Structure of the Daily Maths Lesson will include:

- A warm up activity
- Teaching time
- Independent or group work time
- A plenary

There will be opportunities for the children to work individually, with partners, in small groups and as part of the whole class. The work includes teaching and learning, discussion, mental / oral work, written tasks and practical activities.
The school has its own guidelines on the teaching and learning of calculation.
The written calculation policy details the written strategies for each year group.

It is our schools aim to increase opportunities for physical activity for our children. As part of this initiative we have implemented 'Maths of the Day' which is a scheme which delivers maths in physically active contexts. Our aim was to ensure that at least one lesson per week includes an active maths activity. This is now embedded into our class routines and timetables.

Teaching for Age Related Expectations and Greater Depth

It is the aim that all children will be at the age related stage for their year at the end of each academic year. However, teachers also recognise the children who are exceeding this and can complete more complex maths challenges. To identify children's abilities at the beginning of a topic, children complete a 'pre- learning task.' This is a task completed by all to give the teacher an indication of children's understanding before the topic begins. Sometimes, children who often require support will undertake an extra pre teaching task/ intervention with the class teacher or TA. Similarly, if children have really struggled with a

concept, a ‘post teach’ is implemented where possible to support these children with their learning.
In terms of teaching for greater depth, this is where the challenges enable children to apply their deeper thinking skills. Challenges may include:
Word problems
Mistake spotting activities
Explanation activities
Missing number problems
True or false questions

Challenges are not designed to take children’s learning into the next year group, but to deepen their understanding of the current concept that they are working on. As such, challenges should regularly incorporate reasoning work. Children are allowed to ask the teacher/ peers for help with challenges, as discussion time is also valuable to their learning. This exposure to problems represented in various ways is useful when they come to undertake standardised testing, as they are more familiar with the format of the problems.

Times Tables

As the test for Year 4 is to become statutory for all schools this year, we are preparing children for this by testing times tables each week. At Intake, we complete our Times Tables Olympic Tests weekly and children have time to reflect on their own scores. The Olympics strategy includes twelve differentiated stages that children work through; children must obtain full marks on their current stage before they move to the next. The scheme starts with the two times tables and then builds to include more times tables and also division facts. The final stages also include elements of BODMAS for the children to practise and apply. Each Wednesday, a child is chosen for their effort regarding times tables and is rewarded in assembly with a certificate that week. Children are also encouraged to practise their times tables at home each week to prepare for their upcoming test.

We have also established a times table competition between all collaboration schools for Year 2 and Year 4 children. This has been done not only to encourage the children to improve their multiplication knowledge but also to compare results with other schools and share any practice that promotes positive results.

Homework

Homework is a method of providing children with opportunities to practice and consolidate skills and knowledge, to develop and extend their techniques and strategies, and prepare for future learning. Children in all year groups are expected to practise their times tables on a weekly basis, using amongst other things, ‘Prodigy maths’ in preparation for the weekly Times Tables Olympics tests. Although there is now a much more creative approach to homework there will be some compulsory maths homework included. In Year 5 and 6

additional maths homework will be sent home on a regular basis, in general every other week, (rotating with English homework).

The Role of the Co-ordinator

It is the role of the maths co-ordinators to adhere to the tasks identified in the school improvement plan, provide support in all aspects of planning, teaching, assessment and use of resources. Co-ordinators are required to undertake training and disseminate new knowledge during staff meetings and INSET days.

Co-ordinators work alongside the Headteacher in order to monitor and evaluate progress through book scrutiny, planning scrutiny, lesson observations, learning walks and data analysis. From each piece of monitoring, strengths and areas for improvement are identified and if necessary, checks are carried out again within a month. This is then fed back to teachers to improve teaching and learning.

Impact:

Assessment

Assessment and record keeping will be carried out in accordance with the school assessment policy and marking and feedback policy.

- If a child has displayed a sound understanding of the concept at age related expectation, then the learning objective is highlighted in green and the children are moved onto a challenge activity to deepen their understanding. If this activity demonstrates a clear understanding, then the children will be extended further with a challenge+ in order to master the concept.
- Pink highlighters are used to indicate where work needs to be checked / corrected or to give the children a next step in their learning.

Assessment for Learning (AFL) is regarded as an essential part of teaching and learning and is a continuous process which is shared with all learners. All class teachers are committed to raising standards of attainment through AFL and are responsible for the assessment of all pupils in their class.

We are continually assessing pupils' progress. We see assessment as an integral part of the teaching process and strive to make our assessment purposeful, allowing us to match the correct level of work to the needs of the pupils, thus benefiting the pupils and ensuring confidence and progress.

At the end of each term formal maths assessments will be carried out, alongside more informal assessments. Data should be collected from the formal assessments and collated indicating whether the children are Below/Working Towards/Age Related or Greater Depth. These assessment data should also highlight the progress that has been made.

Information for assessment is gathered in a variety of ways:

Assessment will be carried out through:

- Talking to/questioning the children
- Observations
- Self and peer assessment
- Progress tracking grids
- SATs tests
- Optional SATs tests
- Weekly times tables tests
- Termly assessments – Focus maths tests
- Marking pupils work and feedback
- Pupils response to marking and next steps
- Assessment for learning questions
- Interventions

Performance Indicators.

Performance Indicators, which are the criteria for success of the school's mathematics policy at Intake Farm Primary are:

- KS1 SATs results
- KS2 SATs results
- Pupil progress tracking grids
- Maths books
- Intervention records
- Student interviews

The co-ordinator is responsible for reviewing this policy and its effectiveness. This policy is to be reviewed again in September 2023.