

Falconhurst School



How we teach Mathematics:

Policy for Mathematics

This policy should be read and used in conjunction
with the calculations policy.

This policy was reported to the Teaching, Learning and Standards Committee
on 16th June 2022 for a period of two years.

Review Date: June 2024

Introduction

At Falconhurst school we believe that Mathematics is an essential tool for everyday life which can be accessed by all pupils. This means ensuring a curriculum that is fully inclusive of all children where they are encouraged to think critically and communicate their understanding. We are keen to develop children's knowledge and understanding of mathematical concepts whilst enabling them to practice and develop key skills and various methods. Children have numerous opportunities to investigate patterns and connections within mathematics and apply learnt mathematical skills in different contexts across the curriculum. We have a big emphasis on problem solving opportunities useful for maths and across the curriculum.

We have taken principles from the mastery approach and have adapted it to suit the needs of our pupils. We believe that by working through the curriculum systematically and with regular opportunities to revisit and build on prior learning children will gain fluency and mastery of concepts. In addition to fully understanding, children will have opportunities to make their own conjectures and investigate their own theories to support their problem solving ability. The key features of our maths curriculum at Falconhurst are:

- Revisiting key concepts and connecting to new learning
- Emphasis on connections and patterns.
- Intelligent variation.
- Variation of representations and resources to support conceptual understanding.
- Quickly shifting from concrete to pictorial to abstract representations.
- Timely interventions or next steps.

Purpose

It is key that:

- all pupils 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 are able to recall and apply their knowledge rapidly and accurately to problems
- all pupils **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- all pupils can **solve problems** by applying their mathematics to a variety of routine and non-

routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Aims of the Policy

To encourage children to:

- Be effective problem solvers.
- Enjoy mathematics and choose to develop their own mathematical investigations.
- Use mathematical reasoning to prove mathematical statements.
- Use mathematical language.
- Be fluent in calculations.
- Be able to apply their learning to other areas of the curriculum and real life situations.
- Be able to spot mathematical patterns and use them to develop their own conjectures.

Expectations

By the time children leave Falconhurst School they should be fluent in all the fundamentals of mathematics. They should be able to recall mathematical facts and be able to manipulate them to find the most efficient method of answering a question. They should be able to reason mathematically by producing their own conjectures and generalisations. They should be able to solve problems and identify patterns to support their conjectures. We want all children to enjoy mathematics and leave Falconhurst as a mathematician.

By the end of each academic year, the majority of children should be 'secure' in their year group with an increasing proportion of children achieving 'mastery'.

Time allocation

Mathematics is generally taught for 1 hour a day in KS1 and KS2. In Foundation children receive daily mathematical teacher led sessions with a significant focus on Number and shape. Alongside this, children are also encouraged to encounter mathematics at their self-selected learning stations throughout the day. These are generally kinaesthetic in nature and are linked to the learning theme within the setting thereby ensuring relevance and the promotion of links and connections for children.

Teaching and Learning

All pupils are entitled to a broad mathematical curriculum, where they are challenged to investigate connections between concepts and apply them to wider learning.

Teaching and Learning – Planning

At Falconhurst School we use White Rose Maths schemes of learning and a modified version of their resources. By using the resources across the school we can ensure consistency of mathematical elements and coverage of the curriculum. We believe that this approach

ensures consistent delivery of the Maths curriculum across the school and across the ability range within year groups. It is also designed to support Mathematicians who need more time to master concepts through visual representations as well as providing appropriate challenge for children working at greater depth. Our Long term plans and Medium term plans have been intricately designed to exploit the connections between concepts. This enables the children to learn a new skill and practice it in various contexts across a longer period of time to ensure the knowledge is sustained. For example, when teaching adding; teachers will also teach adding fractions and perimeter within that unit of work. This repetition will support the mastery of a concept as well as the fluency of key facts.

Learning Intentions and expected outcomes should be recorded on a short-term plan or smart and should be shared with the Teaching Assistant (where applicable) prior to the teaching week.

Teaching and Learning – Lesson Structure

Each lesson has the following structure:

- Flashback Four
- The main teaching with reference to prior learning where relevant.
- Opportunity to practice and apply the new concepts
- Feedback in the moment to address misconceptions or move the learning forward.

From Year 1 upwards, children are taught in ability sets and not vertically grouped classes as this ensures accurate pitch and expectation regardless of year group within the phase. Differentiation is still essential and is the responsibility of the class teacher. Children who complete their learning accurately will be given challenges or problem solving activities which enable them to apply their new skill. Children who require additional support will receive immediate intervention to address that area. This may take the form of teacher modelling, smaller step learning or more targeted support from an additional adult where available.

Teaching and Learning – Resources

Resources have been carefully selected by the class teacher to support the conceptual understanding of a concept. They should primarily be sourced from White Rose but other supplementary resources may be used with the subject leader's awareness. Every new concept will have a concrete, pictorial and abstract representation that will be displayed in the lesson. There are two types of resources; Resources for demonstrating and resources for exploring. Demonstrating resources shall support a teacher in explaining a concept and

therefore will be large enough for children to see. Resources for exploring are to be used by the children that require it to support them in working out an answer or in proving a conjecture. These resources should be well organised and available to all children that require them. Where new resources are required, the staff member should discuss it with the mathematics leader.

White Rose resources allow us to provide:

- CPA approach (Concrete/Pictorial/Abstract)
- Variation (Conceptual/Procedural)
- Logical and effective small steps
- Vocabulary
- Manipulative usage

White Rose resources support:

- All learners through a whole class learning approach
- Visual representations designed to show concepts clearly
- EYFS stage learning
- Fluency of calculations and concept through 'Flashback 4' questions

Fluency of number:

It is critical that children know number facts in line with their year group and the maths they are learning. Without secure number facts, learners have to spend too much processing time calculating rather than investigating and practicing new concepts. Specific number facts for each year group are shared with class teachers using Maths passports. Teachers can track the progress of each child using the targets and targets can be shared with parents. Every four weeks, a number fact target will be the focus of daily practise within lessons across years 1-6 and will be shared with parents.

Individual Targeted Outcomes

Since the national curriculum has specific expectations, all children will have their expected outcome (target) clearly shared with them. For the majority of children, we expect that this will be age related. There is an exception for children who are working significantly below their year group attainment and have been identified as needing an Individual Learning Plan (ILP) These children will receive personalised targets relevant to their level of ability.

Displays

Every classroom is expected to have a maths display which supports learning from their medium term plan. This display should include concrete resources, pictorial resources, abstract symbols and mathematical language linked to the area being taught. This display should be a working wall where examples of concepts are clear to provide support for children to complete their daily tasks. Displays should, where possible, be at the front of the room.

Assessment, Recording and Review

Assessment will be ongoing by the class teacher who will be informally assessing the children every lesson to see which children require additional support and intervention. Formal assessments on Insight are a termly record of the class teacher's professional judgement. They are mainly informed by their knowledge of individual children's class based achievements but outcomes of test based approaches will be taken into consideration. The mathematics leaders also scrutinise the data to check for progress, attainment and to compare between year groups. Where anomalies or surprising data is found, the maths leaders will perform a maths moderation to ensure that the data is robust, consistent and accurate.

Monitoring and Review

The teaching of mathematics is monitored through an oversight of learning in books, pupil interviews, progress indicators and teacher drop-ins. The mathematics leader performs regular monitoring activities and provides individual teachers with verbal and written feedback about the positives and points for further development. Feedback is also shared at a senior leader level meeting so that there is awareness of strengths and concerns and any emerging trends across subjects are swiftly identified and addressed.

Training

Training is available in different forms. The maths leaders talk with teachers and use this information to determine relevant training and or support which may be necessary. Where individual support is needed there is opportunity for attending courses or for 1-1 support with the maths leader depending on the need.