

# 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 19th March 2020 for a period of two years.

Review Date: March 2022

## 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 practise 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.

- Answers are given in full sentences.
- Lots of repetition.
- 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.
- Teacher feedback on the same day where possible to address misconceptions and challenge when appropriate.

## Purpose

It is key that:

- all pupils become **fluent** in the fundamentals of mathematics, including through varied and frequent practise 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**

In Nursery, children are exposed to Maths during a large group session four times a week. They then have small group sessions one-three times a week depending on previous learning and children's interests. In addition to this, children have access to adult focused activities throughout the week which run along-side continuous provision.

In Reception children receive a Maths lesson 3 times a week. These children have access to Maths activities and further learning on a daily basis. Children complete carousels of activities but can also choose to explore Maths when making learning choices.

In Lower and Upper School, Mathematics is generally taught for 1 hour a day, four times a week as a minimum.

## **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**

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 practise it in various contexts across a longer period of time to ensure the knowledge is sustained. Using White Rose, we make continuous links between mathematical concepts. Learning is constantly revisited through the lesson starters and Flashback in Four.

Weekly planning should be completed and shared with any supporting staff and colleagues prior to the beginning of each week.

## **Teaching and Learning – Lesson Structure**

Each lesson has the following structure:

- Captain conjecture statement which is discussed and explored.
- The main teaching.
- Opportunity to practise the new skill.
- Opportunity to apply the new skill.
- Opportunity for immediacy of feedback to address misconceptions or move the learning forward.

Across the Foundation Stage and Lower School, children are taught as a whole class with the problems presented in various different ways using different representations and with the support of concrete materials. Tasks are differentiated three or four ways (depending on teaching judgement when planning) using ‘Superheroes’ so they are easily identifiable to the children. Each child has a Learning Intention with steps to success in their book each day. Children will be giving their task by the teacher and a challenge is included at each level of task.

In Upper School classes are also taught as a whole class; however, teachers use a variety of ways to represent problems to promote fluency as well as discussion using stem sentences to aid reasoning and problem solving. Differentiation is offered through the marking scheme of ‘Good, Amazing, Awesome’. Three tasks are provided each lesson and children can choose which task to complete. If they achieve the task, then their next step is to try the harder piece of work. If a child has made errors, then their next step will be to correct their work. Children who have not understood the concept will receive immediate feedback in the class as often as possible and the opportunity to revisit that task during the same day.

## **Interventions and Next Steps**

In Lower School children will correct any mistakes either independently or with the support of an adult. These will be shown in a different colour pen and is done as soon as possible, ideally during the lesson. Children in Upper School are expected to self-assess their own work based on the success criteria. Teachers will highlight which aspects of the lesson children have been successful in, ideally within the lesson for as many children as possible, in order to provide immediate verbal and written feedback.

Teachers will use marking and discussion with children to address misconceptions which could then become the focus of Captain Conjecture starters, intervention throughout the school day or planned intervention where support staff are available.

### **Teaching and Learning - Resources**

Resources have been carefully selected by the class teacher to support the conceptual understanding of a concept. In Lower School, children's learning should be supported by concrete resources as often as possible. Every new concept will have a concrete, pictorial and abstract representation that will be displayed in the lesson. Teachers are asked to use resources such as White Rose Premium resources and Maths Shed to ensure that during a lesson, children are exposed to the same concept in a number of ways using a variety of different representations. Where new resources are required, the staff member should discuss it with the relevant Mathematics Leader

### **Targets**

Children's targets will be taken primarily from their 'Maths Passport'. Every child in the school, (with the exception of individual children in Nursery and Reception) which cover the National Curriculum Mental Oral targets. Each child works through this passport either independently, at home or with adult support at school to progress through their year group targets. Not all children will be on the age related passport, as passports will not be passed until the child is fluent in each target. Provisions will be made with the support of class teachers and the SENCO regarding the needs of individuals on a 1:1 basis. Children are assessed against the National Curriculum targets for their year groups and lessons are planned using White Rose small steps. Medium term plans and objectives will be shared with parents using the school Pathway documents. Passports will also be sent home on a half termly basis as a minimum.

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. The whole class target will be displayed in the classroom and will be referred to during mathematics lessons. The target will be based from the classes passport which the majority of children are on, (regardless of whether this is age related) so that all children are receiving teaching on this area. The target is also sent home to parents to practise at home. Parents will receive a sheet containing the target, a brief explanation of what is expected and some ideas of how to practise and support this at home. The target is changed every half term.

### **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, including stem sentences, linked to the area being taught. This display may be a working wall that is built upon during the week or it may be a display that stays up for each half term depending on teacher preference. Half termly targets should be displayed in the classroom.

## **Marking and Feedback**

In Foundation work is recorded on Tapestry as this lends itself to practical tasks. When work is recorded in books, teachers will tick if correct and highlight the learning intention when it has been achieved. Teachers will also record if children have had support in accessing the learning.

In Lower School, children have a success criteria and challenge for every piece of work. When achieved, this is highlighted in green. Where a child makes a mistake it is highlighted in pink, with children responding in a different colour pen. We aim to address misconceptions with every child at least once during a school week.

In Upper School, marking will include the use of good, amazing awesome for maths. The child can choose which task to complete. Where a child makes an inappropriate choice, teachers must encourage them to try a different task.

- Good is the expectation for all children to be able to complete. (generally age expectation goal)
- Amazing is an opportunity for the child to apply their learning in a word problem, problem solving, challenge
- Awesome is a mastery activity (taken from mastery booklet or problem solving or rich or captain conjecture e.g Sam says that when you multiple by 10 you add a 0. Is he sometimes, always, never true. Show your working.)

Therefore for each lesson has 3 tasks and children choose which task to complete. Children should correct any mistakes within their work using a different coloured pen.

Across the school it is recognised and expected that all children will benefit from high quality verbal feedback and modeling 'in the moment' so that their understanding can be deepened, misconceptions swiftly tackled and conceptual understanding extended.

## **Assessment, Recording and Review**

In Foundation evidence is collected using Tapestry. Children are then assessed using the EYFS statements and ELGs. In Lower and Upper school children will be formally assessed in Autumn 2, Spring 2 and Summer 2. Assessments will be made using Headstart papers, where a scaled score is given. This then correlates to a step on the Falconhurst Steps Ladder.

In Autumn 1, Spring 1 and Summer 1 children will be assessed using broader methods of teacher judgement which will include, but is not limited to, looking at books, talking to children, Maths passports and exploring how well they show understanding during lessons.

The analysis of data and pupil outcomes will underpin meaningful Pupil progress meetings which will be held once every half term. These will identify children who are not keeping up with their peers, and discuss ways of further supporting them as well as identifying and understanding why some children are securing accelerated rates of progress.

### **Monitoring and Review**

The teaching of mathematics is monitored through a triangulation of books, steps and teaching. The Mathematics Leaders perform regular book monitoring activities and provide individual teachers with written feedback about the positives and a next step. The next step is then followed up at the next book monitoring or sooner if required. 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. The teaching is observed through a mixture of learning walks and lesson observations. During the learning walks the maths leaders will look at displays, targets and will talk to pupils. Teachers are provided with written feedback from both and again receive a next step where necessary.

### **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.

Staff can also talk to Maths Leaders when support, advice or guidance is required.

### **Parental Involvement**

Parents will be given a copy of their child's passport at least once a half term. This will be an up to date insight into their child's progress. Curriculum maps will include the Maths focus for that half term which will also give examples of key vocabulary, websites to support Home Learning and access to White Rose Hub.