

Junction Farm Mathematics Policy

Reviewed: Autumn 2018

Next Review: Autumn 2020

Purpose

‘Mathematics is a creative and highly inter-connected discipline. A high-quality mathematics education 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’ (National Curriculum, 2014).

Our Mathematics Policy at Junction Farm, together with our Calculation Policy, aims to achieve consistency, progression and high standards across the teaching and learning of mathematics at our school. This policy has been devised by the mathematics leader, shared and discussed with all staff and has the full agreement of the governing body at Junction Farm.

Aims

The National Curriculum (2014) states that three aims of mathematics aim to ensure 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 the ability to recall and apply knowledge rapidly and accurately.
- **Reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- 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.

Teaching and learning in mathematics at Junction Farm should therefore align with the three National Curriculum aims while reflecting the overall ethos and mission statement of our school:-

- All of us learning all of the time.
- Challenging and achieving.
- Making learning fun.

We aim to achieve high standards in mathematics through a consistent, progressive and cohesive approach to the subject. This allows us to reinforce and uphold our schools ideas and values with regards to our Rights Respecting School Award.

Spoken language

The national curriculum for mathematics reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their mathematical vocabulary and presenting a mathematical justification, argument or proof. They must be assisted in making their thinking clear to themselves as well as others and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

Early Years

Mathematics within the Early Years is guided by the requirements and recommendations set out in the Early Years 'Development Matters' EYFS document. Children have a daily specific mathematics lesson where objectives from the document are taught in a broad range of contexts in which children can explore, enjoy, learn, practise and talk about their developing understanding.

All children are given ample opportunities to develop their understanding of mathematics through their extended provision. Indoor and outdoor environments are utilised fully to enable children to discover through physical activity and develop understanding of mathematical concepts. Children are given sufficient time, space and encouragement to discover mathematical ideas, concepts and language during child-initiated activities in their own play. They are provided with opportunities to practise and extend their skills in these areas and to gain confidence and competence in their use. Mathematics is also encouraged at home with the support of parents to address personalised areas of focus through the use of 'Proud Cloud' books.

The objectives at the end of Reception, dovetail well with the objectives for Year 1. The progression between the Reception and Year 1 expectations, supports children to be encouraged to reach their full potential without being restricted by their year group expectations. This also allows for seamless progression from the Early Years to Key Stage 1.

The National Curriculum – KS1 and KS2

The Primary National Curriculum (2014) is organised into the following areas (with different aspects introduced in different year groups):

- Number
 - Place Value
 - Addition, Subtraction, Multiplication and Division
 - Fractions (including decimals and percentages)
- Ratio and proportion
- Algebra
- Measurement
- Geometry
 - Properties of Shapes

- Position and Direction
- Statistics

The above strands are broken down into statutory objectives for each year group. These can be found in more detail in the National Curriculum for Mathematics (2014). The National Curriculum entitles all pupils to a **broad and balanced** curriculum and emphasises the importance of **applying knowledge** in a range of situations. This idea underpins all work in mathematics.

Progress and Mastery

Expectations of progress are high. Our expectation is for all children to be working on the curriculum for their year group, striving to become ‘masters’ by the end of a school year, focussing on **depth of understanding** and **ability to reason** in a range of situations. Pupils who grasp concepts rapidly should be challenged through a range of complex problems which aim to deepen and consolidate understanding before any acceleration into new content.

Mastery of mathematics is not a fixed state but a **continuum**. At each stage of learning, pupils should acquire and demonstrate sufficient grasp of the mathematics relevant to their year group, so that their learning is **sustainable over time** and can be built upon in subsequent years.

Integral to mastery of the curriculum is the development of deep rather than superficial conceptual understanding. The essential idea behind mastery is that all children need a deep understanding of the mathematics they are learning so that:

- future mathematical learning is built on solid foundations which do not need to be re-taught;
- there is no need for separate catch-up programmes due to some children falling behind;
- children who can often fall a long way behind, are better able to keep up with their peers, so that gaps in attainment are narrowed whilst the attainment of all is raised.

Special Educational Needs

Children with special educational needs are also expected to make significant progress and work on the curriculum for their year group where possible. They will be supported through personalised learning plans and intervention strategies where appropriate, written by the class teacher with help from the SENCO and the subject leader where required – reasonable adjustments will be made. Professional support from outside agencies will be used as appropriate.

Gifted and Talented/More Able

Gifted and Talented/More Able children should be given a range of experiences in mathematics with the aim of developing **mastery with greater depth**, as according to the National Centre for Excellence in Teaching Mathematics; ‘research indicates that these pupils benefit more from enrichment and deepening of content, rather than acceleration

into new content'. Work will be differentiated to ensure they have sufficient challenge. GTMA children should be identified on the register and have a specific provision to enhance their talents and abilities. We aim to identify GTMA children early and track their progress carefully. Opportunities will be taken wherever they arise to extend and develop their skills, including opportunities outside school, for example competitions and quizzes. For those children who are gifted and talented in more than one area, an Extended Education Plan (E.E.P.) will be implemented.

Planning and Resources

Planning of mathematics teaching and learning takes place in several stages. Long Term planning is governed by the National Curriculum and set out by 'Focus Maths' in Key Stages 1 and 2, and by the Early Years 'Development Matters' document in the Early Years.

Medium Term planning is from 'Focus Maths' and breaks the aspects down into sequences of work with objectives focussing on individualised progression and continuity of skills and concepts. Where possible, links are made with other areas of the curriculum ensuring a cross curricular approach.

Teachers then complete weekly plans using predominantly Focus Maths. Children are taught in form classes and ability groups will be fluid and will change weekly according to the results of the pre-learning task.

Junction Farm Primary is committed to providing high quality resources and recognises the importance of practical equipment to promote understanding of mathematical concepts to reach mastery. Each class is resourced with the practical equipment necessary for day-to-day work tailored to the needs of the children. Each year group has a bank of teacher's resources, books, cards and photocopiable materials including: arithmetic tests, mental workouts and New Curriculum resources. Staff are aware of resources available for planning – focusing mainly on Focus Maths, White Rose Maths Hub and Active Maths. It is an expectation that staff spend time to source and adapt resources to meet the needs of their pupils.

In addition, a variety of computer programmes and activities are available for developing mathematical skills, including a subscription to MyMaths and Test Base. Each class has an interactive whiteboard which allows ICT to be used effectively by the teacher and the children.

Teaching

Early Years, Key Stage 1 and 2 children receive a daily mathematics lesson of one hour which combines a mental and oral starter, a main teaching input, a task, followed by a plenary to consolidate teaching or challenge knowledge in preparation for moving the children on to the next step/achieving mastery. Teaching sessions should have a quick pace, involve all pupils and use a range of teaching styles and techniques to cater for different learning styles.

In the Early Years, a range of opportunities, experiences and activities are provided daily, allowing children to discover and develop mathematical concepts and skills through play and child-initiated situations. Every opportunity is grasped to make the most of children's natural interest in exploring mathematical concepts and problem solving.

Good teaching is achieved by balancing different elements:

- Sharing the excitement of learning
- Modelling and demonstrating methods
- Providing opportunities for exploration, acquisition, consolidation and application of knowledge and skills
- Allowing time for dialogue and discussion to consolidate thinking and reasoning skills
- Careful questioning and evaluation of children's answers
- Provision of appropriate and good quality resources
- A range of problem solving opportunities to achieve mastery of concepts

Arithmetic/Mental Maths/Times Tables

Fifteen minute arithmetic sessions take place daily in Key Stage 1 and 2. Mental Arithmetic is an important life skill and regular practice is critical. Children who are fluent with number will be able to use their mental arithmetic skills to find efficient strategies for completing calculations, recalling and applying number and times table knowledge rapidly and accurately. Where children are confident with these skills they quickly learn how to apply their knowledge in bigger numbers and new situations, including problem solving/reasoning.

Times tables practice should take place on a daily basis in KS2. Children from Y2-Y6 have access to Times Table Rockstars where teachers can set times tables for the children to practise. This is encouraged at home through homework. Each week, a 'Rockstar of the Week' certificate is awarded to the child in each year group with the highest number of coins – this is also celebrated on the newsletter.

Calculating and Recording

We have a clear, coherent calculation policy for calculating and recording in mathematics. The policy aims to ensure consistency and progression throughout Junction Farm. Our calculation policy was devised by the mathematics subject leader with the involvement of all staff as a way of gathering any methods or approaches used across school. Please see our 'Calculation Policy'. Annually, parents are given a copy of the calculation policy and targets for their child's year group to ensure consistency between home and school in learning.

The amount of recorded work in a lesson may vary as time will be spent in direct teaching and practical activities. Children will be encouraged to talk to the teacher and to each other about their work and to explain their methods and reasoning. Other more formal methods will be taught (in line with policy) and when recording in this way, there will be specific expectations:

- Clear figures
- Careful use of squared pages to aid calculations – 1 digit per square (exception of fractions)
- Use of a ruler
- Page folded vertically in KS2 to organise work.

Marking and Assessment

When marking children's work, we are not simply looking for a correct answer. The teacher needs to have a regard for the methods of working, for logical thinking and for knowledge of facts and skills.

Assessment for learning is used as a daily tool by teachers to determine children's progress and plan the next steps for learning. Each week has a different focus area, taken from Focus Maths.

Pre-assessment tasks are completed on a Friday where teachers can mark and grade a pupil's starting point of a particular objective as: Emerging (E – less than 40% correct), Developing (D – 40-80% correct) or Secure (S 80-100% correct). Children will then be grouped according to their E, D or S grading to ensure individualised progression across the week. Children who are graded 'S' can 'leapfrog' the fluency stages and focus on problem solving and reasoning to reach Mastery level when appropriate. On the following Friday, children will complete a post-learning task which will then be re-graded as (E – less than 40% correct), Developing (D – 40-80% correct), Secure (S 80-90% correct) or Mastering (M 90-100% correct). We should see progression from the pre-learning task to the post-learning task.

Feedback to pupils about their own progress in mathematics is achieved through discussion and the marking of work as set out in the school marking policy. Teachers mark in green and children respond in red. Self/peer marking is encouraged in mathematics, giving instant feedback to children but this should then be checked and acknowledged by teachers, giving steps to improve. This should be done through the use of green and pink highlighters:

- Use green highlighters to highlight success
- Use pink highlighters to highlight up to 3 errors – this can be number formation, errors in calculations etc.

No highlighting should be done on the pre-learning task as this is the starting point before any teaching. A written comment should be provided for the post-learning task to acknowledge progress.

Children's books and Target Setting

At Junction Farm, staff and children take pride in the quality of children's work. High standards of presentation and recording are expected in all of children's books. In the front of books, we expect to see children's individual target tracking sheets for the child's year group. These should be consistently updated from the post-learning tasks. This data should be updated on SIMS Programme of Study tracker for Mathematics.

At the back of books, children should have a regularly updated flip out target (informed by target sheet – once per half term). Targets should be challenging but achievable within a half term time frame. Below this, there should be a record of the child's targets (dated) from across the year.

At the end of each term, pupils complete assessments from Focus Maths (assessing the work taught that term). This enables teachers to monitor progress and give percentage scores for their year group. These scores are recorded in SIMS. Formal summative assessments are carried out at the end of Key Stages 1 and 2 in the form of S.A.T.s.

Parental links

Parents are given copies of the calculation policy and target sheets for their child's year group at the start of each year.

Parents are informed about their child's learning in mathematics through half termly topic maps which are sent home and also found on the school website.

Helpful maths links can also be found on the website to support with homework/consolidate learning at home. Children are encouraged to practise number bonds/times tables at home as much as possible to develop speed and accuracy of recall.

Rights Respecting School – Equal Opportunities

Junction Farm is a Rights Respecting School and children's rights are upheld; All work is planned to ensure equal access and opportunity for all children regardless of gender, race or disability. This is monitored by analysis of pupil performance throughout the school, to ensure that there is no disparity between groups. We integrate mathematics in school through a cross-curricular approach and seek to take advantage of multicultural aspects of mathematics Please see Junction Farm Equal Opportunities Policy and Scheme for Single Equality.

Role of the Subject Leader

- To monitor teaching standards
- To monitor progress in children's learning and mathematical development
- To support teaching staff.
- To direct / initiate development.
- To liaise with the Senior Management Team
- To report to governors.
- To budget for, order, distribute and maintain resources.
- To take the lead in policy development
- To keep up to date with recent Mathematics developments.

Secondary school liaison

Children from Junction Farm generally transfer to Eggescliffe Comprehensive.

Transition meetings and curriculum planning sharing currently takes place with staff to ensure a smooth transition. Once a week, maths classes are delivered to our more able Year 6 mathematicians by staff at Eggescliffe.

Dissemination and implementation of the policy

This policy will be given to all members of the governing body, teaching and non-teaching staff. All parents will be invited to read the document and reference copies will be available from the Head Teacher.

Date of implementation: Autumn 2018