

Mathematics Policy

Gordon Primary School

Revised Spring Term 2023

Signed _____ Chair of Governors

To be reviewed Spring Term 2024

Mathematics Policy

Gordon Primary School

Introduction

This policy serves to outline the teaching, organisation and management of Mathematics at Gordon Primary School. Mathematics is the study of numbers, shapes, and space using reason and usually a special system of symbols and rules for organising them.

The policy has been drawn up by the Mathematics Subject Leader, in consultation with members of the school's teaching staff, and has the full agreement of the Governing Body. The implementation of this policy is the responsibility of all teaching staff, under the direction of their year group leaders. The responsibility for monitoring and reviewing Mathematics teaching and learning rests with the SLT and the Mathematics Subject Leader.

Rationale

Our policy recognises Mathematics as both, a functional tool and a set of valuable key life skills. We want all children leaving Gordon Primary School not only to be numerate, but also to be able to transfer their mathematical skills to other curriculum areas and into everyday life. By "numerate" we are referring to an individual's ability to think and react mathematically, to apply number sense to everyday situations and to reason, using acquired number knowledge.

We want to impart to our children that Mathematics is not confined to just acquiring mathematical skills, but is most importantly about adopting an inquiring approach, being curious and approaching the problems with enthusiasm. Our ultimate aim is to lead children to employ the appropriate application of skills to problem solving with confidence.

All pupils are entitled to access the Mathematics curriculum at a level appropriate to their needs arising from race, gender, ability or disability, and all Mathematics lesson plans will therefore be differentiated to meet the needs of the children in each class.

INTENT

Through our teaching of Mathematics, we aim to:

- Ensure a broad, balanced, creative and stimulating mathematical curriculum in line with current curriculum guidance.
- Present Mathematics in meaningful contexts and to embed a range of practical activities designed to enhance children's mathematical experiences.
- Ensure continuity and progression in children's learning as they progress through Cleveland.
- Instil in children, a positive and confident attitude towards Mathematics where independence and reasoned risk-taking are nurtured.
- Equip children with practical mathematical life skills and knowledge needed to function outside of school through to their adult lives.
- Highlight appropriate cross-curricular links.
- Involve our parents in their children's mathematical learning both in school and at home.
- Encourage children to approach Mathematics creatively.

These aims enable our children to:

- Use a range of calculation strategies to solve real life problems competently and confidently.
- Recall number facts using a range of mental strategies to aid calculations rapidly and accurately.

- Gain a secure understanding of a wide range of mathematical vocabulary and use this to explain their reasoning and understanding.
- Have concrete number sense as well as the ability to reason with numbers, identifying when answers are sensible.
- Have a secure understanding of Shape, Space, Measures and Data Handling and the ability to apply concepts and skills in a cross-curricular way and in everyday life.
- Understand that making a mistake is a learning opportunity.

IMPLEMENTATION

Curriculum

Within Early Years, the curriculum is broken down into 3 main strands, which align with the Early Learning Goals:

- Number
- Numerical Patterns

Throughout Key Stage One and Two, the curriculum is further broken down into the following strands:

- Number: Number and Place Value; Addition and Subtraction; Multiplication and Division; Fractions
- Measurement
- Geometry: Properties of Shapes; Position and Direction
- Statistics (From Year 2 onwards)

In Year 6, the following strands are additionally taught:

- Ratio and Proportion
- Algebra

When Planning Mathematics, we:

- Ensure that lessons are based on the National Mathematics Curriculum.
- Review, adapt and adjust the current daily lessons with carefully planned activities to meet children's learning needs (in class or set). Plans may be devised as a year group (then tailored to a class/ set), or by individual class/set teachers.
- Ensure that a typical maths lesson in Gordon Primary School lasts for 60 minutes, though this may be increased slightly depending on a year group's needs.
- Plan adequate time for children to practise independently, the skills taught/revised in the main teaching part of the lesson.
- Enable children to practise and expand their mental maths in a way that is relevant to and engaging for all abilities in the class.
- Tailor the curriculum to pupils' needs, including pupils working below the expected level, EAL and SEN, which enables them to make accelerated progress towards the age-related expectations.
- Develop Maths intervention programmes in order to raise achievement.

- Ensure that Gifted and Talented children are challenged through investigative activities, independent/paired problem solving, the provision of challenges, work with differentiated outcomes, devising questions/problems for the class to solve and intervention groups where possible.

Teaching & Learning

Early Years and Foundation Stage

Nursery and Reception follow the Foundation Stage objectives. These offer experiences that will help develop the skills and concepts of mathematics leading to the Early Learning Goals. The scheme of work ensures that mathematics is taught in its own right and within the wider curriculum and gives emphasis to the acquisition of mathematical language to support the development and application of mathematical concepts. Children are also given the opportunity to develop problem solving and numeracy skills

Key Stage 1 and Key Stage 2

Maths lessons at Gordon Primary comprises of a 5-part structure

Maths Lesson Part 1: Warm up/ignition activities

The purpose of these is simply to start children 'thinking mathematically' – to establish a mathematical mindset. Games, loop activities, short open-ended problems (for which solutions can be shared or discussed) – anything which will have students 'lace up their maths boots'. This is kept very brief and should be accessible for all children. The warm-up activity can be used to 'bridge' into your explicit teaching session and make links to the previous maths lesson.

Maths Lesson Part 2: Explicit Teaching of the key maths concepts and key words

The class teacher introduces the new Learning Aim to the children. This is where the class teachers spend some time in the lesson either introducing new concepts and modelling the new skill, matching to the Learning Aim. Time taken for explicit teaching will vary depending upon the complexity of the concept being taught. Teachers can use stories / analogies / role play to get the message across. The class teacher may need to display a modelling example on the flipchart. The teacher models how to solve the problem with the children. We teach the representation which the children will apply. Teachers model how to use the mathematical language and sentence stems as we solve the problem. Teachers should also try to demonstrate a variation of the representation.

Maths Lesson Part 3: Assessment for Learning and application

During this phase, we use the I do, We do and You do approach to solve different representations of questions matching with the LA of the lesson. In the I do, the teacher models one question which could be a fluency or reasoning. We do is when the teacher models with the children and this is a good chance to see which children are confident and which children are less confident. The teacher can ask questions to gauge children's understanding of the concept. This is a very good AFL opportunity because when it comes to You do, children have to independently answer the questions and the teacher can then use this time to support the pupils who are still unsure or who haven't grasped the concept. If some children are excelling and don't need further support and modelling, teacher can release those children to start on their independent work.

Maths Lesson Part 4: Independent and group/guided work

The children who are confident can begin their independent work. The children's tasks are split into three sections, where each section is progressive onto the next, showing a clear progression in the lesson.

Check it – In this first part of their independent work, the children practise becoming 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.

Think it - This is the second part where children begin to solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems onto series of simpler steps and persevering in seeking solutions.

Master it – In this last part of their independent work, where children need to reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language

The teaching and learning approach looks at 3 key areas (CPA):

Concrete – hands on

Pictorial – using models and pictures

Abstract – symbols and numbers

The CPA approach ensures that all key areas of understanding Maths are addressed.

The learning aim is displayed in each lesson and is used as a title in exercise books. The Steps to Success are clearly specified, or, where appropriate, developed by the children. Relevant vocabulary is displayed and understanding is developed through pair and group talk. Throughout the school and across all abilities, physical resources, visual aids, models and images are used to support teaching and learning. Gordon Primary School embraces ICT as a set of effective teaching tool to aid children's learning progress and in raising attainment.

The teaching of Mathematics at Gordon Primary School consists of:

- Whole class directed teaching where the outcome is differentiated by questioning, work, support given and use of equipment
- Focus group teaching for target children
- Peer teaching/evaluation and use of talk partners
- Individual work
- Paired work
- Group work

Each maths teacher has in their Curriculum Planning Folder, a set of Progression in Calculation guidelines – structured, progressive calculation methods, taking the learner from informal to formal written methods. The implementation of these guidelines is the responsibility of all teachers at Gordon.

IMPACT

As with all our subject teaching, we do not teach Maths in isolation to other curriculum areas, we relate the work undertaken to real life situations and we also aim to:

- Improve pupils' skills in English, Science, History, Geography and Computing.
- Develop pupils' critical thinking and ability to analyse.

- Promote pupils' awareness and understanding of gender, cultural, spiritual and moral issues.
- Develop pupils as active and responsible citizens.

Assessment

The use of formative and summative assessment is an integral part of teaching and learning at Gordon Primary School.

Formative assessment checks children's learning throughout the lesson against learning aims and steps to success. This informal assessment notifies the teachers of the next step in their planning to address learning needs. Feedback is also given in children's books to help consolidate learning. Children are encouraged to evaluate their own and others' work to engage them in making judgements about the stages of their learning and consequently empowering them to become skilled reflective learners and critical thinkers.

Formative assessment is recorded using pupils' attainment profiles (target tracker) along with on-going summative assessment. Assessment information is shared with parents at termly parents' evenings. At the end of each year, parents receive a written report detailing their child's progress & attainment.

Data analysis of pupils' test results and teacher assessments is intrinsic to identifying target children for intervention. These include the under-achievers and those making less progress than expected. Based on data analysis, there are intervention programmes in place to raise achievement of target children.

Schools in England are also required to administer an online multiplication tables check (MTC) to Year 4 pupils. The purpose of the test is to determine whether pupils can recall their times tables fluently, which is essential for future success in mathematics.

In addition, children at Gordon Primary School are provided with individual targets based on each child's needs and are shared with parents during parents evening. Children are encouraged to set their own targets alongside those set by the teacher and are provided with opportunities to meet their targets during maths lessons.

Children's work

Children must do their calculations in pencil in their maths books. The Learning Aim and short date must be shown for each piece of work. Children are to be encouraged to write one digit for every square in their books. Children's books are regularly monitored by the Leadership Team, year group leaders, the Maths subject leader and staff during staff meetings.

Maths Areas

Maths working walls are to be placed in every classroom. These should have interactive activities for children to work on and key mathematical vocabulary on display. Key mathematical resources such as 100 squares, times tables and number lines should also be displayed and kept in these areas.

The Maths subject leader will:

- Work closely with colleagues, offering guidance and support, as well as providing leadership and direction in mathematics through Insets.
- Monitor and evaluate the quality of teaching and learning of Mathematics through lesson observations, scrutiny of lessons and of children's books.
- Ensure the Maths Action Plan is implemented, monitored, evaluated and reviewed in line with school development.

- Develop intervention programmes as a means to raising attainment.
- Ensure consistency in the teaching of Mathematics across the whole school.

Monitoring, Evaluation and Review

This policy is monitored through:

- Regular scrutiny of children's books
- Regular monitoring of teaching plans
- Evaluation and review of assessment data
- Lesson observations to monitor the quality of teaching and learning
- Pupil interviews

Equal Opportunities and Special Needs (including Gifted and Talented)

In line with our *Equal Opportunities Policy*, we are committed to providing a teaching environment conducive to learning, where each child is valued, respected and challenged regardless of race, gender, religion, social background, culture or disability. This can be achieved through classroom organisation and careful planning that enables the active participation of all pupils. In all classes there are children of differing ability. Some pupils may need provision to be made for additional support, modified resources or tasks. Equal learning opportunities are provided for all children by matching the challenge of the task to the ability of the child. This is done by:

- Setting common tasks that are open-ended and can have a variety of results (targeting Gifted and Talented children).
- Setting tasks of increasing difficulty where children are challenged with additional tasks (targeting Gifted and Talented children).
- Grouping children by ability and setting different tasks for each group as and when appropriate.
- Providing a range of challenges through the provision of different resources.
- Arranging pupils into mixed ability groups with more able pupils supporting SEND and EAL pupils to access tasks.
- Using additional adults to support the work of individual children or small groups, especially SEN and EAL pupils.
- Modifying or providing additional resources that can be used to support a child's access to the curriculum.
- Adult/s to support SEND children with fine motor skill needs.
- Differentiated activities and tasks for SEND children.

The UNICEF Rights Respecting School Framework

We are proud to be working within the UNICEF Rights Respecting School framework. Ensuring that children understand their rights and responsibilities as per the United Nations Convention of the Rights of the Child is central to our school's ethos. Where learning opportunities and links exist, relevant articles from the United Nations Convention of the Rights of the Child are made explicit through the teaching of the curriculum.

Policy Reviewed: Spring term 2023

Date of next review: Spring term 2024