



Crofton Junior School's Mathematics Policy

Mathematics

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore 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)

At Crofton Junior School, we recognise that Mathematics is essential to everyday life. We aim to provide a high-quality maths education which supports our children in becoming fluent in the fundamentals; being able to reason mathematically and being able to solve a range of increasingly complex problems so that they leave our school equipped with the skills they need in preparation for the next stage of their learning. It is our intention that children:

- develop conceptual understanding and the ability to recall and apply knowledge rapidly;
- are able to reason and problem solve by applying maths to a variety of problem-solving tasks and challenges;
- develop resilience that enables them to reason and problem solve with increased confidence;
- have a passion for maths and enjoy the challenges that they are presented with.

Aims

Mathematics teaches children how to make sense of the world around them through developing their ability to calculate, reason and solve problems. It enables children to understand relationships and patterns in their everyday lives. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics.

The aims of teaching mathematics are:

- to promote enjoyment and curiosity in learning through practical activity, exploration and discussion;
- to promote confidence and competence with numbers and the number system, becoming increasingly fluent in their application of the four rules of number;
- to develop the ability to solve problems by applying their mathematics to a variety of problems in a range of contexts and persevering in seeking solutions.
- to develop a practical understanding of the ways in which information is gathered and presented;
- to explore features of shape and space, and develop measuring skills in a range of contexts;
- to understand the importance of mathematics in everyday life.

Teaching and Learning

Pupils are provided with a variety of opportunities to develop and extend their mathematical skills throughout years 3, 4, 5 and 6. The teaching of mathematics at Crofton Junior School provides opportunities for:

- Group work
- Paired work
- Individual work
- Whole class teaching

Within maths lessons, through careful planning and preparation, pupils engage in:

- the development of mental strategies, which link to the Mental Calculation Policy, as well as children being encouraged to reflect on efficiency within calculations.
- written methods – following the Calculations Policy
- practical activities
- investigation work
- problem solving
- mathematical discussion
- consolidation of basic skills and number facts

At Crofton Junior School, we recognise the importance of establishing a secure foundation in mental calculation and recall of number facts before progressing to the teaching of more formal methods. These are taught as discreet areas, either within starter sessions, or integrated into the main teaching where children are encouraged to use and apply strategies, linked to the Mental Calculations Policy.

All staff are expected to model the correct mathematical terminology in the teaching and learning of maths. Children are also expected to use the correct mathematical terms in their verbal and written explanations.

Mathematics is used in cross-curricular contexts, particularly in science and geography, with interpreting and presenting data. This helps children to apply and consolidate mathematical concepts taught in maths lesson. In addition, using maths in a purposeful way in real-life contexts helps the children to realise that mathematics is important in the real world. The work that is set is challenging, motivating and encourages the pupils to talk about what they have been learning and the skills they have used to solve problems.

In all classes, children have a wide range of mathematical abilities and therefore, we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. The objectives for the lessons are taken from the National Curriculum and NCETM Ready-to-Progress documents. Teachers plan fluency and varied fluency tasks, before progressing to reasoning and problem solving. Teachers are encouraged to look back at the previous and following year group objective of the particular strand/area when planning so they are aware of how an objective progresses.

At Crofton Junior School, classroom assistants are used to support and challenge children where they usually work with an individual, or a small group of children.

A whole school approach is taken to the teaching and learning of times tables. Year 3 focuses on revising 2, 5 and 10 multiplication and division facts (Year 2 expectations) before progressing onto 3, 4 and 8 multiplication and division facts. Year 4 revises Year 3 expectations before focusing on the remaining multiplication and division facts that need to be taught. In Years 5 and 6, all multiplication and division facts are revised (or taught if there are significant gaps) through regular, weekly practice to consolidate these. The children are tested weekly on these and encouraged to learn them as part of their homework. A whole school reward system is in place across the school where children can earn badges as they continue to progress with their recall of multiplication and related division facts. Further challenge is provided through the use of application tests for the children who are secure at year group expectations. This promotes developing the breadth of understanding as well as applying other place value and number skills appropriate to each year group's end of year expectations.

TTRockstars is an online platform that children use for homework. The expectations match the year group expectations and with regular practice, children become fluent and enjoy the timed challenges. Throughout the year, TTRockstars is used to foster and excite children to practice their multiplication and division facts with whole school and year group competitions.

Crofton Junior School's calculation policies are used to support the teaching and learning of the four operations for addition, subtraction, multiplication and division. This progresses from using visuals and jottings to the formal written methods, which are in-line with the expectations of the National Curriculum and end of year expectations for each year group. The document focuses heavily on teaching for understanding using mathematical vocabulary and jottings to support understanding, as well as the concrete to pictorial to abstract approach.

Once strategies have been taught, children are encouraged to use the most efficient methods, considering:

Do I know the answer?



Can I work it out in my head?



Do I need a jotting?



Do I need a formal method?

All classrooms display these prompts on their working walls for the children to refer to.

Mathematics Curriculum Planning

Mathematics is a core subject in the National Curriculum, and we use the National Curriculum as the basis for implementing the statutory requirements of the Programmes of Study. The objectives and expectations in the National Curriculum give an outline of what we teach in the short term, as well as using the extra notes and

non-statutory guidance to support with the planning and progress across year groups. Teachers also use the NCETM Ready-to Progress curriculum prioritisation materials, which gives further details and exemplification of specific concepts to be taught. Teacher use other resources to support teaching and learning, including their own tasks, White Rose, Learning by Questions, I See Reasoning, Collins, Classroom Secrets, NRich, Stretch and Challenge.

The class teacher completes the weekly plans for the teaching and learning of mathematics. These weekly plans list the specific learning objectives for the current year group as well as provision for the children working below the age related expectations. Separate plans for SEND children detail specific tasks and objectives. These children are usually working on Wakefield Progression Steps. Weekly plans shows progression from the fluency through to reasoning and problem solving stages. These plans give details of how the lessons are to be taught, including use of resources and focus of adults. As the week progresses, these may change following the outcomes from the previous day's learning, in terms of groupings and tasks. Staff are encouraged to annotate/adapt grouping accordingly.

Contribution of mathematics to teaching in other curriculum areas

English

The teaching of mathematics contributes significantly to children's understanding of English in our school by actively promoting the skills of reading, writing, speaking and listening. In mathematics lessons, children are encouraged to read and interpret problems, in order to identify the mathematics involved. All children are expected to use the language of mathematics in discussion and when recording their work, including spelling the mathematical vocabulary correctly. They are also improving their command of English when they explain and discuss their work with others, including adults. In English lessons too, maths can contribute as children encounter mathematical vocabulary, graphs and charts when reading non-fiction texts.

Personal, social and health education (PSHE) and citizenship

Mathematics contributes to the teaching of PSHE and citizenship. The work that children do outside their normal lessons encourages independent study and helps them to become increasingly responsible for their own learning. The planned activities that children do within the classroom encourage them to work together and respect each other's views. We present children with real-life situations in their mathematics.

Spiritual, moral, social and cultural development

The teaching of mathematics supports the social development of our children through the way we expect them to work with each other in lessons. Children have Kagan places as well as maths places. Children have the opportunity to work with different peers throughout the year. In lessons, children are seated accordingly depending on the intended outcomes and support needed. In most lessons, children have the chance to discuss their ideas and results.

Mathematics and Computing

Information and communication technology enhances the teaching of mathematics significantly, because it offers ways of using and applying mathematics in a variety of ways when problem solving. Teachers can use software to present information

visually, dynamically and interactively, so that children understand concepts more quickly. When working on Scratch, children can use both standard and non-standard measures for distance and angle. They can also use simulations to identify patterns and relationships.

Mathematics and inclusion

At Crofton Junior School, mathematics is taught to all children, whatever their ability and individual needs. Mathematics forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our mathematics teaching, we provide learning opportunities that enables all pupils to make good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents and those learning English as an additional language, and we take all reasonable steps to achieve this.

Assessment against the National Curriculum allows teachers to consider each child's attainment and progress against end of year expectations. This ensures that teaching is matched to the child's needs. Children who are causing concern and are not making enough progress with classroom based intervention/supports/scaffolded/differentiated tasks, teachers speak with the SENCO.

When attainment and/(or) progress falls significantly outside the expected range, the child may have additional needs and the SENCO becomes involved. Discussions are had around classroom organisation, use of resources, scaffolds, differentiated tasks to determine if additional measures need to be put in place in the first instance to try and increase rates of progress.

Children with an EHCP (Educational and Health Care Plan), My Support Plan, A Supporting Me to Learn plan or a Learner Profile may have additional support to meet their needs. Some children have a separate, personalised maths curriculum with additional support to ensure that they progress and achieve well, even if they are working significantly below year group expectations.

Assessment for learning

In mathematics, teachers conduct both formative and summative assessments. Formative assessments happen daily and inform day-to-day planning and extra intervention, as needed. Children are grouped accordingly following the outcomes from the previous day's teaching. This can be from outcomes in books, questioning or from discussions with a child. Pre-learner tasks may also be used when appropriate, to inform starting points, and identify misconceptions so differentiation is appropriate and allows for increased rates of progression for all groups of learners.

There are three summative assessment points (end of Autumn, Spring and Summer terms (and a Baseline assessment for year 3 in September)) to measure attainment and progress for all children. NFER assessments are used as they follow the format of the KS2 Standard Assessment Tests with an arithmetic and two reasoning/problem solving papers. The assessment data is used to inform planning for the following term (medium term plan), alongside the RAG rated NCETM Curriculum Prioritisation materials.

Resources

There are a range of resources to support the teaching and learning of mathematics across the school. All classrooms have their Base 10/place value counters to support number and calculations work. Resources to support other areas of mathematics are stored centrally for all members of staff to access. Resources are reviewed on a regular basis to ensure that they are of high quality and replaced as necessary to meet the needs of the curriculum, and the children.

Monitoring and review

Monitoring of the standards of children's work and of the quality of teaching and learning in mathematics is the responsibility of the subject leader. The work of the subject leader also involves supporting colleagues in their teaching, being informed about current developments in the subject, and providing a strategic lead and direction for mathematics in the school. Books scrutinies take place termly, with additional ones added in if deemed necessary. Lesson observations are conducted on an annual basis (as identified in the School Development Plan) with opportunities for children to give their input (pupil voice).

The subject leader gives the head teacher an annual summary in which s/he evaluates strengths and weaknesses in the subject, and indicates areas for further improvement. The head teacher allocates regular management time to the subject leader to fulfil objectives on the action plan which feeds into the School Development Plan. It is the subject leader's responsibility to report to the governor's on a termly basis about standards in mathematics across school.

Policy Review

This policy will be reviewed at least every two years in accordance with the school's policy review programme.

Date: April 2022