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 both number and space 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 mathematics' 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
- Investigational 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 standard written methods are introduced. 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.

We use the appropriate mathematical terminology in our 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 other curriculum areas wherever possible or appropriate. This helps to expand and consolidate mathematical concepts and using maths in a purposeful way in real 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. We recognise this fact and provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. Most units of work start with a pre-learner task for each child to complete independently. This assesses the strengths and identifies areas which need to be taught. These starting points maximise learning time as children move onto mastery and greater depth tasks at an appropriate rate, and increase rates of progress within a lesson.

We use classroom assistants to both support and extend children; working with an individual or with a group of children as required.

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 times table and division facts that need to be covered. In years 5 and 6, all multiplication and division facts are focused on through regular, weekly practice. 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 in which children can earn badges as they continue to progress with their recall of times tables 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.

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.

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 programme 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. However, we also use other resources to support teaching and learning, including Lancashire Grid for Learning planning disk, Focus Education planning, Collins and other internet based resources (NRich, White Rose Hub) to supplement.

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 for the SEN and support group, as appropriate. The 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 main teaching input.

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, we expect children 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 all children with real-life situations in their mathematics work on the spending of money.

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. We group children so that they work together, and we give them the chance to discuss their ideas and results. The study of famous mathematicians around the world contributes to the cultural development of our children.

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
In our school, we teach mathematics 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.

When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style, and differentiation – so that we can take some additional or different action to enable the child to learn more effectively. Assessment against the National Curriculum allows us to consider each child's attainment and progress against end of year expectations. This ensures that our teaching is matched to the child's needs. Children who are causing concern and are not making enough progress with classroom based intervention are brought up at planning meetings after speaking with the SENCo.

Intervention through an EHCP (Educational and Health Care Plan) or specific school support will lead to the creation of an Individual Education Plan (IEP) for children with special educational needs. The IEP may include, as appropriate, specific targets relating to mathematics.

Assessment for learning

In mathematics, teachers conduct both formative and summative assessments. Formative assessments happen daily and inform day-to-day planning and weekly interventions. 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 are also 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)) which measures progress and identifies children who are making good progress as well as children who need more specific, focused support. Assessments are used to inform planning as well as identify areas which need to be taught or further work to fully consolidate particular areas.

Resources

There are a range of resources to support the teaching and learning of mathematics across the school. All classrooms have their own set of equipment to support number and calculations work. Resources to support other areas of mathematics are stored centrally for all members if staff to access. Resources are reviewed on a regular basis to ensure that they are of high quality and replaced as necessary.

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. 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: January 2020