Cranbrook Primary School

"Our children today our future tomorrow"

Maths Policy

Updated: January 2020

Subject overview

Intent

The intent is to design an ambitious mathematics curriculum which is accessible to all and will maximise the development of every child's ability and academic achievement that they will need to succeed in life. We enable our children to become confident and articulate communicators by enriching their mathematics vocabulary. We intend for our children to be able to apply their mathematical knowledge to science and other subjects such as reading and computing. We want them to know that mathematics is essential to succeed in life and necessary for financial responsibilities and most forms of employment. We aspire for our children to appreciate the power of mathematics and build a life-long passion for maths by exploring their curiosity through memorable learning experiences.

We aim to enrich the pupils with a whole new culture of deep understanding, confidence and competence in maths – a culture that produces strong, secure learning and real progress. As the children progress we want them to build confidence, widen their horizons and attain a positive growth mind set. Our lessons enable our children to develop fluency, mathematics reasoning and problem solving in high quality activities using strategies such as guided maths and APE It (Answer it, prove it and explain it)! Through our enterprise scheme we provide children with an opportunity to develop their global identity through working with the local community. We continuously strive to provide excellent provision for pupils to develop their skills from fluency through to mastery and beyond. We make effective use of appropriate summative and formative assessments to monitor pupils are making progress as well as listening to pupil voice.

Aims and Objectives

We at Cranbrook Primary School aim to provide a rich mathematics pedagogy which teaches children how to make sense of the world around them through developing their ability to **calculate fluently, reason mathematically and solve problems**. It enables children to understand relationships and patterns in both number and space in their everyday lives.

Our objectives in the teaching of mathematics are to:

- develop an appreciation and fascination of mathematics itself
- promote enjoyment of learning through practical activity, exploration and discussion
- ensure continuity and progression in mathematics throughout the school
- promote fluency, confidence and competence with numbers and the number system especially with number facts and related facts
- develop the ability to solve problems through decision-making and reasoning in a range of contexts
- develop a practical understanding of the ways in which information is gathered and presented
- explore features of shape and space, and develop measuring skills in a range of contexts
- help and support children to understand the importance of mathematics in everyday life
- give value and support to diverse cultural and linguistic backgrounds of all children through mathematics

School Curriculum - Programme of Study

EYFS

The approach of teaching mathematics includes the way in which the child engages with other people and their environment – playing and exploring, active learning, and creating and thinking critically – underpin learning and development across all areas and support the child to remain an effective and motivated learner. The Unique Child reaches out to relate to people and things through the **Characteristics of Effective Learning**, which move through all areas of learning. To embed this, parents/carers are invited into early years to see how they can apply and support real life maths into their homes.

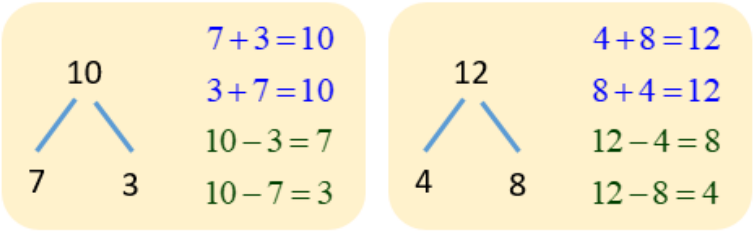
- playing and exploring
- active learning
- creating and thinking critically

These are all encompassed through daily routines, registration problem solving activities and calendars.

Key Stage 1 & 2

The Programmes of study for mathematics are set out year by year for Key Stages 1 and 2 in the new National Curriculum (2014). The programmes of study are organised in a distinct sequence and structured into separate domains. Pupils should make connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also have a solid understanding of number facts and related facts. One of the strategies used in school is 'Three for free,' if the children are able to make one number fact using three numbers they can also make three more. An example is shown below:

Fact Family is a set of four related addition and subtraction facts that use the same three numbers.



By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Lower Key Stage 2

The principal focus of mathematics teaching in lower Key Stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the

relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of Year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work. They will then be tested on their times tables in the summer term in Year 4.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Upper Key Stage 2

The principal focus of mathematics teaching in upper Key Stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of Year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.
Pupils should read, spell and pronounce mathematical vocabulary correctly.

Mathematics Curriculum Planning

Mathematics is a core subject in the National Curriculum, we use the objectives from the National Curriculum 2014 Programmes of Study scheme as the basis for implementing the statutory requirements for mathematics. The Early Years Foundation stage use guidance from the Development Matters EYFS.

We carry out the curriculum planning in mathematics in three phases (long-term, medium term and short-term). We use the work derived from the Renewed Framework Objective Mapping with all new objectives from the New Curriculum, this gives a detailed outline of what we teach in the long term. Our medium-term mathematics plans, which are adopted from the White Rose blocks, give details of the main teaching objectives for each unit including AfL suggestions and define what we teach. They ensure an appropriate balance and distribution of work across each term. These plans are routinely reviewed by subject and phase leaders.

Planning for each lesson is created in collaboratively by teachers and year groups, to ensure that all children experience similar activities. The planning document and the planning for the lessons are personalised by each teacher and is also annotated by teachers so that the work is appropriate to the children's capabilities and relevant differentiation is in place. Supplementary activities and materials are also used in class to support the requirements of the National Curriculum 2014.

Teaching and Learning

We at Cranbrook Primary School use a variety of teaching and learning styles in mathematics. Our principal aim is to develop children's knowledge, skills and understanding. During our daily lessons, planned by a qualified teacher, we encourage children to **ask** as well as **answer** mathematical questions. They have the opportunity to use a wide range of resources to support their work. Weekly mathematical vocabulary is on display in classrooms to encourage high quality mathematical talk. During maths lessons, pupils also have maths talk time where they discuss mathematical vocabulary with their peers to rehearse their understanding. Wherever possible, we encourage the children to apply their learning to everyday situations.

To help motivate children we have a Mathlete of the Week notification, which is presented during Celebration Assembly and their name is featured in the School's weekly newsletter. In addition, certificates are also given out for Times Table Rockstar.

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. We achieve this through a range of strategies such as guided maths, split class teaching, oral mental starters and arithmetic. Additionally, in some lessons there is differentiated group work, and in other lessons children are organised by working in pairs on open-ended problems or games. We use HTLAs and LSAs to help develop some children, and to ensure that work is matched to the needs of individuals.

Special In-Class Arrangements

Setting in Mathematics is parallel sets in Years 3, 4, 5 & 6 on a regular basis to ensure that all children have the support and challenge, which matches their ability. However, there is flexibility with movement in setting e.g. arrangements could be based on gender or other factors that arise within a cohort. In years 3-5, the fifth day is class based maths, where there is a focus on investigative maths. Extra classes are used in Year 5 & 6 (depending on need) and intervention programmes are used across the rest of the school.

Progression from mental to written methods:

Ways of recording the four operation calculations will show progression and consistency throughout the year groups (see appendix 1 written calculation policy). The calculation policy has been adapted from the new curriculum.

Calculators

Calculators should not be used as a substitute for good written and mental arithmetic. They should therefore only be introduced near the end of Key Stage 2 to support pupils' conceptual understanding and exploration of more complex number problems, if written and mental arithmetic are secure. Teachers should use their judgement about when IT tools should be used.

Cross curricular

Throughout the whole curriculum, opportunities to extend and promote mathematics should be sought. British Value links are made with other subjects when relevant, as well as part of the topic. Mathematics contributes to many subjects in the primary curriculum, often in practical ways for example in science, mathematical skills such as classifying , counting, measuring, calculating, estimating and recording in tables and graphs are encountered. Measuring often occurs in art, design and technology along with shape, including symmetry. The study of maps in geography includes such mathematical knowledge as co-ordinates, angles, direction, position and scale. Computing is used for data handling, angles, spread sheets, number programmes on the networks and other areas where applicable when using appropriate websites on the internet.

Nevertheless the prime focus should be on ensuring '*mathematical progress'* delivered discretely or otherwise.

Enrichment activities

A range of Mathematical enrichment activities are used outside of Maths lessons to widen pupil's horizons, develop a cultural capital and to promote lifelong learners. Some of the enrichment activities include Moneysense workshops by Natwest, where children develop their understanding of the importance of money in real life. Sumdog National competition is used to create a competitive buzz across the school. Enterprise week take place in the summer term which inspires young people to become entrepreneurial and in EYFS, 100 days at school is celebrated through mathematical concepts. Mathematicians and secondary school pupils are invited in to our school to inspire future careers in maths. Further activities are used (maths days) to provide creative and engaging maths days.

Mathematics and Inclusion

At 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 enable 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 use personalised teaching and learning to achieve this.

Resources

Resources have been distributed to all year groups so that equipment is available in all classes. Children are encouraged to choose which resource they would like to support their learning. Across the school we use the CPA approach (concrete, pictorial and abstract). A range of concrete mathematical resources including Base 10, Numicon, bead bars, bead strings and counters are used for the 'doing' stage. The pictorial stage is the 'seeing' stage, where visual representations of concrete objects are used to model problems. Finally the abstract approach is the 'symbolic' stage where children use abstract symbols to model the problems. Furthermore, we use a maths booster resource called RMEasimaths and provide logins available from reception upwards. There is also a huge drive on other online Maths resources such as Timestable Rockstars, Sumdog and Education City. Children are encouraged to choose and alternate between the different online resources to support them.

Displays

All classrooms must have 'APE it' (Answer it, Prove it, Explain it) on display on their maths working wall, which changes depending on the Maths topics being covered. Additionally, mathematical vocabulary and methods and related facts are also showcased and referenced throughout the lesson. There is also a challenge area in classrooms.

Assessment

The 'Year End Expectations' have been taken from the New National Curriculum and state the minimum requirements a learner must meet in order to ensure continued progress throughout the year in line with age expected standards. Progress meetings are held every term to discuss identified gaps and actions that need to be implemented. Learners are assessed with a consistent assessment approach against each area in terms of whether, at each stage, they are Beginning, Working towards, and Secure or Greater Depth bands. These assessments are carried out each term. EYFS assessment is taken from the Early Learning Goals document which children are assessed against.

Additionally, pupil voice questionnaires are used to ensure pupils have a positive attitude towards maths. Guided maths allows them to develop and progress their skills with tailored teaching and learning and the big maths scrap books are used to collect mathematical evidence around the school and to see the progression of work across the year and the school.

Marking and presentation

Teachers are expected to adhere to the school's marking policy when marking books, and the presentation policy when guiding children as to how to present their work. Next steps should be given and children should have sufficient time to respond to these to progress their learning.

Homework

All homework is given out weekly and is to enhance and consolidate the children's learning from the week's focus. There is a homework agreement that we share with parents and carers at the start of the new academic year.

Monitoring and Evaluation

The Maths subject leaders, alongside the Senior Leadership Team are responsible for monitoring and evaluating curriculum progress. This is done through book scrutiny, planning scrutiny, lesson observations, pupil interviews, staff discussions and audit of resources.

Review

The Mathematics policy will be continuously updated and reflected upon in our practice throughout the school year.