



Mathematics Teaching and Learning Policy

This teaching and learning policy is underpinned by the school's vision and values:

Be happy: aspire, believe, achieve

Happiness is... the feeling you get when you help others and contribute to the world; when you work hard at something that was difficult to begin with; when you feel safe, cared for and respected; when you feel confident in your uniqueness and know where you are going.

Philippians 4:13

'I can do all things through Christ who strengthens me.'

1. Introduction

1.1 This teaching and learning policy is written so that staff, parents and governors are clear with regard to teaching and learning standards and expectations of Mathematics across the school.

1.2 The school's Mathematics subject leader is Mr Jack Conway.

1.3 The school's Mathematics link governor is Nick Potts.

2. Aims and objectives

2.1 Intent

We acknowledge and celebrate that each child is unique and that they learn in different ways. At Croft school, we provide a rich and varied Mathematics learning experience that allows children to develop their skills and abilities to their full potential. Our Mathematics curriculum is ambitious and designed to meet the diverse needs of the children who attend Croft School. It aims to provide all pupils with the knowledge, skills and an understanding of its importance in everyday life.

We want our children to be confident, independent mathematicians who have strong fluency skills which they can apply confidently to reasoning and problem solving activities. We aim to use Mathematics to develop children's resilience when challenged with problems; developing their emotional maturity. We aim to cultivate an inquisitive environment where pupils are continually asked to question mathematical concepts. We aim to plant Mathematics firmly in the real world and challenge the pupils to think about how they could apply concepts taught to everyday life problems.

Our core aims are to provide an Mathematics curriculum that builds on pupils' individual talents and uniqueness and empowers our children to be:

- Independent
- Perseverant
- Respectful

We believe that these are the three gifts that we would like to give our pupils help them to succeed as life-long learners and children of God. The 'giving' of these gifts are what drive the curriculum at Croft school.

The development of pupils as learners of the future is at the heart of what we are trying to achieve at Croft School. We want our children to be happy mathematicians who are confident, reflective, and resilient.

2.2 Implementation

Key skills and knowledge is a high priority at Croft. Every lesson is focused on the skills needed to achieve mastery within that mathematical concept. Mastery is displayed through the pupils' ability to reason. During reasoning activities, they have taken their skill and shown an in-depth understanding of that particular mathematical concept. Pupils are encouraged to make their own conclusions and assertions before concepts or skills are modelled.

Pupils are encouraged to access work that is challenging and to make mistakes, these mistakes can then be corrected by use of physical resources, development of vocabulary, questioning, connections to previous learning or additional teaching input. This gives the pupils the opportunity to develop their independence, thus develop their confidence on their journey to becoming self-assured learners.

2.3 Impact

Our Mathematics curriculum ensures that our children develop detailed knowledge and skills across the curriculum and, as a result, achieve exceptionally well and is reflected in our consistently high outcomes for our pupils.

Our pupils will:

- Enjoy the challenge of Maths and are able to apply mathematical knowledge, concepts and procedures appropriately for their age
- Be confident in answering reasoning and problem solving questions.
- Be independent and motivated thinkers.
- Reflect upon their progress and learning and feel happiness in what they have achieved.
- Independence will mean that when objectives are achieved they will have a sense of pride; instilling in them skills need to experience these feelings thus leading to their development as emotionally intelligent individuals.
- Learn about career opportunities that involve Mathematics
- Develop, use and understand Mathematics technical language
- Become happy mathematicians: confident, resilient and independent
- Be confident in applying general mathematical skills to a range of mathematical problems
- Understanding the importance of Mathematics in everyday life

Our pupils are continually growing as independent, perseverant and respectful learners and citizens.

3. Effective learning

3.1 We acknowledge that children learn in many different ways and we recognise the need to develop strategies that allow all children to learn in ways that best suit them most effectively. We take into account the different ways that children learn when planning and teaching in order to ensure all children access a full and varied curriculum.

3.2 Pupils will work independently, in pairs, small groups and larger groups in structured and unstructured ways. Our Mathematics curriculum encourages children to take responsibility for their own learning, to be involved as far as possible in reviewing the way they learn, and to reflect on how, what helps and what makes it difficult for them. In addition to the curriculum knowledge that we deliver we also aim to develop children's learning to learn skills; life-long skills that will play a major role in their learning both at school and in later life.

These include:

- Observation and reflections skills
- Group work and team work skills
- Problem-finding and problem-solving skills
- Creative thinking skills and imagination
- Analysis, logic, reasoning and synthesis
- Lateral thinking skills
- Listening skills
- Research skills (including locating and managing)
- Resources, questioning, skimming, scanning
- Comprehension; (summarising, note-making)
- Personal organisation skills
- Presentation skills
- Peer teaching and learning skills
- Evaluation skills
- Personal and collaborative decision-making skills
- Time management skills
- Memory skills
- Leadership skills
- Social skills
- Digital literacy skills

4. Curriculum Design

4.1 Curriculum

We use the Mathematics National Curriculum and Key Stage expectations to plan our curriculum. Our curriculum aims to ensure that all pupils: explore a wide range of mathematical concepts; access reasoning and problem solving activities; become competent at using the four operations; understand a range of methods to complete a

calculation; have a comprehensive understanding of place value; have a deep understanding of shape, position and direction; are able to understand fractions and what they represent; use a range of techniques to present data and statistics; able to use a range of measures to represent different quantities; able to tell the time which is presented in a range of ways; can use algebra to work out unknown quantities; can use manipulatives and drawings to independently support their learning as well as showing deeper thinking.

4.2 Content

Please see National Curriculum Document.

4.2 How does the school ensure curriculum coverage?

The Mathematics subject leader is responsible for developing the school's curriculum intent and ensuring that it is implemented consistently and effectively and is having an impact across the school. The Mathematics curriculum is split into broad 'Learning Focuses' to form a long term map. The Mathematics Learning Focuses are:

- **Place Value**
- **Addition**
- **Subtraction**
- **Multiplication**
- **Division**
- **Measure**
- **Geometry (position and direction)**
- **Geometry (properties of shape)**
- **Fractions, decimals and percentages**
- **Data and Statistics**
- **Ratio**
- **Algebra**

The subject leader works with other subject leaders across the school to make relevant links between learning focuses and the co-curriculum. The Mathematics curriculum operates on a two year rolling cycle from Early Years to Year 6 and ensures full curriculum coverage of learning focuses (see appendix 1 – Mathematics Long Term Map).

4.3 Curriculum Organisation

The Mathematics curriculum is organised so that key skills and key vocabulary are built upon sequentially to ensure that learning is deep and embedded. The subject leader developed a progression in Mathematics key vocabulary and key skills document to communicate this (see appendix 2 – Mathematics Key Vocabulary Progression Map and appendix 3 – Mathematics Key Skills Progression Map).

4.4 Planning

Using the Mathematics long term map and progression in key vocabulary and key skills documents. The class teacher produces learning unit overviews for staff that summarise key aspects of learning in Mathematics.

The school uses a cross-curricular approach to planning Mathematics and uses 'WOW' experiences to engage pupils' interest, often at the outset of learning.' This is intended to motivate and stimulate the children's curiosity for the topic.

Schemes of Learning from the White Rose should be followed to inform planning. Resources from White Rose, Classroom Secrets, Focus Maths and Nrich can be used to create activities for the pupils to complete.

5 Teaching

5.1 Lessons

High quality Mathematics teaching involves drawing on a range of strategies that are closely matched to the learning objectives of the lesson. This, in turn, will match the particular learning needs of the pupils in the class. Teachers plan and resource lessons with high expectations for all pupils including the most able. Learning objectives reflect this and are used to measure the outcomes of the lesson.

Lessons are not always the same, however teachers will always ensure that:

5.1.1 All tasks and activities that the children partake in are safe and appropriate risk assessments are made prior to learning.

5.1.2 The leaders and experts in the classroom are the adults. Adults lead pupils decisively and confidently following school policies and class routines having high expectations of what pupils can achieve.

5.1.3 Staff are always ready for pupils as soon as they enter the room with work and resources prepared.

5.1.4 Learning objectives and key vocabulary are visually shared and discussed with pupils at the outset of learning. Learning objectives are used to measure the outcomes of the lesson. Pupils and staff know the language that they are expected to use and its meaning before learning begins. Technical and subject specific vocabulary is shared with Teaching Assistants prior to learning.

5.1.5 Pupils spend the first part of the lesson exploring one key word. In UKS2 pupils include this word on their daily learning journal

5.1.6 Titles based on learning focus and the short date are written and underlined (with a ruler) at the top of the page in pupils' maths books. Short date to go on the left hand side at the top of a page and the title to go two lines below in the middle of the page.

5.1.7 In KS1/ LKS2 Work should be done directly in an exercise book as often as possible and worksheets should only be stuck in if completely necessary. The presentation of Maths' work is a skill that needs to be taught and therefore practiced by the pupils.

5.1.8 In UKS2 Pupils will complete their work directly onto Seesaw use a range of digital and traditional skills to present their work. Please see 11.6 Digital Literacy for ways pupils can present their work. Books should be used at least once a lesson unless Challenges need to be completed directly on Seesaw. The date and title should be

written in books at the start of every lesson, even if pupils do not use them. Mathematic books are tools for showing thinking and working out and are not the final outcome. Pupils will still be reminded on the importance of presenting their work correctly.

5.1.9 Learning is differentiated. The teacher will use resources such as: physical manipulatives, pictorial representations (see Mathematics Calculation Policy), now and next prompts, technology, simplified texts etc to ensure that pupils can access learning and achieve. Some pupils will require more intense, targeted support and may need guidance from an adult to meet their needs. Higher ability pupils should be stretched using reasoning and problem solving activities, using pictorial and manipulatives to represent thinking and training to become mathematic coaches.

5.1.10 Learning is pitched to meet all children's needs. Each lesson's activities are broken into 4 challenges, these are simply called Challenges 1-4, the difficulty of each challenge doesn't necessarily get harder with each challenge, this is to ensure there is a focus on pupils seeing a mathematical concept in different scenarios. Challenge 1 should always have a focus on fluency skills, Challenge 2 can be a reframing of this fluency skill or a reasoning/ problem solving activity, Challenges 3 and 4 should always be a reasoning and/or problem solving activity. All children should access Challenge 1, those pupils excelling can be moved on to later challenges before finishing a challenge, any pupils who are struggling should be supported immediately and given 'Step Up' challenges with the goal of breaking down problems further so they can access the 1st challenge. These pupils are expected to complete reasoning and problem solving activities; these could be completed either with extra scaffolding, simpler numbers or simpler concepts.

5.1.11 In LKS2 Pupils who complete Challenge 4 should 'journal their work' and in UKS2 all pupils will be given this opportunity each lesson. This requires them to write and detail their thinking in arriving at answers in that lesson's activities. This is to be done on Seesaw with question prompts to help focus their answers (not all questions have to be used every lesson):

- What have you learnt?
- What challenged you?
- What didn't you understand?
- What methods helped you?
- What do you what to know next?

5.1.12 When pupils finish their journaling they will complete 'Take Your Learning Further,' they will do this on Seesaw and use a range of techniques to record their work, see 11.6 Digital Literacy. Pupils will be given the following headings:

- Drawing a picture
- Writing a word problem
- Creating a set of instructions
- Creating a glossary
- Creating a mind map
- Think of a non-example
- Use physical objects to explain your learning

5.1.13 Questioning is purposeful and promotes learning. Teachers anticipate where mistakes arise and plan probing questions or examples ready to shape learning. Teachers provide TAs with examples of questions prior to learning.

5.1.14 Teaching assistants and other adult helpers are deployed effectively. Sometimes they work with individual children or with groups. Teaching assistants are expected to pick out children struggling during the input or activities and make these known to the teacher so the next steps can be decided.

5.1.15 Adults consistently and overtly praise and value 'hard work' and 'making mistakes' so that pupils feel empowered to take risks in their learning and develop resilience. Teacher should deliberately present incorrect work and unpick where the mistake is.

5.1.12 Adults promote a culture of independence and enable pupils to solve their own problems and not do this for them. They work hard to help pupils to 'help themselves'.

5.1.13 There is a school expectation that pupils work in silence when working independently and that pupils raise their hand if they would like to speak and not 'shout out' or get out of their seat to get an adult's attention. Staff ensure that that this always happens.

5.1.14 Staff do not accept poor standards of written work and spelling mistakes must be acknowledge in Mathematics. Pupils are challenged to rectify this swiftly and consistently. As stated earlier presentations skills must be taught explicitly during Maths lessons. There should only by one number in a box and all lines must be drawn with a ruler.

5.1.15 Lessons are concluded with a reflection activity where pupils assess their own learning and each other's. Pupils are provided with an introduction to where the learning will go to next.

5.1.16 Teacher input should be short and interactive. The input can be done live or as a video; Pupils will be told to interactively follow the video where applicable, pausing as they need to, the teacher can use this time to move around the class and make a note of who needs extra support, the video should end with a question, if the pupil gets it correct they move on to challenge 1 and if they get it incorrect they should tell the teacher and begin the Step Up Challenge.

5.1.17 Where possible inputs can be delivered to a class that targets both Year groups, this can be done through questioning and differentiation of activities. The majority of the time, the different coverage across both Year groups will mean that inputs are vastly different and may not apply to the work one year group is doing. When this is the case there are a number of options:

1. Each year group will have a separate video to watch or one year group watches a video while you deliver to the other year group.
2. The lower year group should be taught first and the older year group can partake in this input as revision and be challenged further with more complex questioning.
3. One of the year groups can be taken out of class and lead by a teaching assistant using the planning/ video from a teacher, when this is the case this year group should go no longer than 3 lessons without a formal teacher input.
4. One year group can be given a task to independently complete while the teacher delivers an input to the other year.

5.1.18 As part of morning activities Pupils will be allowed access to Mathletics (our online interactive Maths resource). Pupils will be able to complete a range of activities:

- Activities- Relate to learning in class and are based on the curriculum.
- Multiverse- Times table practice game.

- Live Mathletics- Chance to test arithmetic skills with pupils in class and from around the world.
- Reasoning and Problem solving questions- These must be set by the teacher.
- Courses- These must be set by the teacher and are an opportunity to revisit learning from earlier curriculums.

5.1.19 Opportunities for learning outside of the classroom must be taken as often as possible so pupils can see how Maths works in the wider world.

5.1.20 General Mathematical language e.g. positional, time, measurement should be taught outside of lessons at any possible point including break times and Worships.

5.1.21 Pupils will be regularly taught to answer exam style questions, with a focus on understanding which method or concept most be employed to get to a correct answer.

5.2 What resources are available?

The Mathematics subject leader is responsible for planning, ordering, managing, organising Mathematics resources. The basics include: paper, pencils, pens, Base Ten – White box containing ones, tens, and hundred blocks, 100s, 10s, 1s blocks, dice, Spot Frames to Ten, Numicon resources including instructional guides, Coloured wooden blocks, Abacus, counters, Dominoes including metric dominoes, SEN Maths games, 10 / 100/ 1000 counters, Metre sticks, Trundle Wheels, Balance Scales, Measuring Scales, 2D shapes, geoshapes, coins, Maths games, clock faces, sand timers, calculators, compasses, protractors, rulers, Mathletics, Seesaw. There is an annual resources budget available for the subject leader of £500.

6. Assessment

6.1 Formative assessment and feedback

Pupils' Maths books and Online Learning Journals provide the important evidence for formative assessment. However, pupils are also observed when they are working and answering questions and are assessed against learning outcomes using the school's one page learning evaluation and feedback summary sheet. Pupils are assessed using Rising Star's NTS assessment at the end of each term, again this is important evidence for formative assessment.

6.1.1 All work in pupils' Maths books is marked, either by the teacher, themselves or a peer. Work produced on Seesaw will be monitored every lesson by the teacher- feedback will be given verbally at least twice a unit via Seesaw. Occasionally, staff will use written and verbal questions to extend and consolidate pupils' understanding, these next steps will be recorded on the one page summary learning and evaluation and feedback summary sheet. Next steps for pupils are always responded to.

6.1.2 Sometimes teachers will assess learning using the school's one page learning evaluation and feedback sheet. This form of assessment reduces teacher workload and provides opportunities for teachers to assess all pupils swiftly. Outcomes of one page learning and feedback sheets are shared with pupils either at the beginning of the next lesson. This forms the lessons starter as it is a chance for pupils to revisit the previous day's learning, address misconceptions, make corrections or push their thinking on further.

6.1.3 Mini plenaries are used during learning to assess and provide consolidation opportunities for pupils at transition points within a lesson. Pupils are also provided with 'live' individual feedback as pupils work by teachers and teaching assistants.

6.1.4 Peer to peer feedback and reflection is used regularly as an essential part of learning in Mathematics.

6.1.5 Pre and post learning tests will be completed around each unit. These tests will be kept in folders and pupils will be responsible for completing a cover sheet recording their scores. We use the White Rose end of block assessments. Pupils who score less than 50% on the post learning test should be given targeted interventions to address these gaps.

6.1.6 The subject leader maintains a portfolio of examples of pupils' work to support assessment judgements and moderation.

6.1.7 Maths Working Walls are to be updated for each unit they must include:

- **Vocabulary**
- **Real-life Problems**
- **Big Question**
- **Tools to help pupils**
- **Showcase**

6.2 Summative assessment

Pupils are assessed as either:

WTS		Pupil is beginning to make simple connections within the assessment focus.
EXP		Pupil has started to develop an understanding of skills and ideas around the assessment focus.
GDS		Pupil has reached a good level of independence.

At the end of the year, a judgement is made as to whether a pupil is 'on track' to complete the key stage as: working towards expectations, working at expectations or working above expectations. When a pupil reaches the end of a key stage a formal judgement is made using the same criteria. Pupils are tracked using Key Performance Indicators which will be reviewed at the end of each unit.

7. The role of pupils

7.1 Our pupils will:

- Valuing themselves and each other as mathematicians
- try hard and persevere with their learning
- value their Maths book
- respect and value Mathematics resources and materials
- model positive attitudes to learning
- value the satisfaction of completing challenging work
- listen to others well and be respectful towards adults and each other

8. The role of Staff

8.1 Teachers and teaching assistants are responsible for the delivering high quality teaching and learning. They will:

- Implement the school's Mathematics Teaching and Learning Policy rigidly to ensure consistent practice across the school
- Model an enthusiasm for Mathematics

- Model thinking and talk to develop pupils' metacognitive and cognitive skills and ensure that learning is sufficiently challenging to develop pupils' self-regulation and metacognition
- Ensure that pupils are taught how to organise and effectively manage their learning independently
- Plan lessons that consider prior attainment, individual learning needs, different learning styles in order all students can access the curriculum and make at least good progress
- Use questioning styles to stretch and challenge students
- Keep up to date with their Mathematics subject knowledge and pedagogical approaches to learning
- Be acutely aware of students who are not making progress in Mathematics and plan timely interventions to ensure that good progress is made

8.2 The Mathematics subject leader is responsible for the overall leadership and management of Mathematics across the school. They will:

- Maintain an effective Mathematics subject leadership file.
- Create and implement an annual Mathematics action plan and monitor and evaluate progress towards targets.
- Monitor the quality of teaching of Mathematics (evidence includes: Lessons, Planning, Pupils' Work, Learning Walks, Class Displays, Learning Environments, Pupil Surveys, Staff Surveys, Pupil interviews)
- Maintain Mathematics teaching and learning monitoring records.
- Maintain a termly updated Mathematics One Page Leadership Summary.
- Ensure that the school's Mathematics Teaching and Learning Policy and subject information on the school website are accurate and up-to date.
- Lead staff meetings, support staff and ensure that staff are clear about teaching and learning expectations in Mathematics.
- Access and record Mathematics CPD and maintain personal subject knowledge and skills.
- Have high expectations of themselves within the role of Mathematics subject leader and of others in the implementation of the Mathematics Teaching and Learning Policy.

9. The role of Mathematics link governor.

9.1 The Mathematics link governor will support, monitor and review the Mathematics Teaching and Learning Policy.

In particular they will:

- Monitor the effectiveness of the school's Mathematics teaching and learning policy through the school self-review processes.
- Complete two governor monitoring visits each year alongside the Mathematics subject leader.

10. The role of parents

Parents have a fundamental role to play in helping children to learn. We expect that parents will be supportive of the implementation of the school's Mathematics teaching and learning policy.

11. Digital Learning

11.1 The use of technology to support pupils' learning is a high priority in school. Increasingly jobs are becoming more dependent on employees using technology to work more effectively with technology. At Croft we recognise the need this creates for us to help pupils develop technological skills.

11.2 In KS2 we will allow all pupils to have access to a tablet. KS1 will have access to one between two.

11.3 Tasks that can be completed on these tablets:

- Research
- Accessing websites
- Screen sharing capabilities to support pupils work
- Screen sharing capabilities to give children live feedback within a lesson
- Support with spellings
- Access to online dictionaries
- To complete class work set on Seesaw
- To share work with home on Seesaw easily
- To have access to books and stories
- To create films
- To create posters
- Using Augmented Reality apps
- Educational games
- Whole class quizzes
- Work handouts to be available on the tablet

11.4 Work produced on iPads will be expected to be of the same quality of work produced in books. Presentation of core and non-core work must remain formal with no use of Emojis and drawings unless pupils have been directed to do so.

11.5 Where Learning Journals are completed on Seesaw these must be assigned as activities. This means monitoring can be done through the calendar function on Seesaw.

11.6 The ways children can respond to work digitally are:

- Write in books and take photos of work
- Write on whiteboards and take photos of work
- Voice Recordings
- Screen Recordings
- Peer to peer interviews
- Screenshots
- Text
- Peer Text (#TAG)
- Videos

11.7 Screen Time must be monitored carefully. Pupils should be spending no more than 30 minutes on a tablet completing a task without an extended break. Lessons where pupils are using tablets to look at a handout can last for up to 1 hour as pupils will only be referencing the tablet while writing in their books.

11.8 Pupils will be made aware of the taking of photos on their tablets, it must be done with other people's permission. This is acceptable with the direction of the teacher and can be shared on Seesaw (if we have the child's permission)

11.9 At times pupils may be given the opportunity to partake in discussions on Seesaw. Pupils can use an informal tone of writing in their comments, this will be taught to them explicitly and support their learning of different levels of formality depending on purpose and audience. Pupils must not use abbreviations and any post containing them will not be approved. Pupils will be reminded of constructive feedback before these sessions.