MATHEMATICS POLICY

Approved by:	**Castlefort Governing Body**	**Date: September 2026**
Signed by:	**Chair of the Governing Body**	
Last reviewed on:	**September 2025**	
Next review due by:	**September 2027**	

Aims

This policy outlines the teaching, organisation and management of mathematics taught at Castlefort Academy.

The National Curriculum for mathematics aims to ensure that all pupils:

- become 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.
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.
- can solve problems by applying their mathematics to a variety of routine and non- routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Our Aims

At Castlefort Academy, we use the new National Curriculum for Mathematics (2014) as the basis of our mathematics programme. Staff use 'White Rose Mathematics', 'Primary Stars' and 'Master the Curriculum' to help plan their lessons with a focus on mastery at all ages.

Through commitment, determination, and a willingness to embrace change we will:

- develop all children and young people's understanding of the principles of mathematics; to promote curiosity and fascination – to become an active learner with a passion for mathematics.
- deliver a mathematics curriculum which places the child at the heart of the process.
- develop well-rounded and successful mathematicians, informed by the National Curriculum and Mathematics Hub, and exposed to carefully designed lessons with opportunities to explore and challenge, taught with a clear mathematics objective.
- deliver a mathematics curriculum which is based on small steps teaching, allowing the majority of children to progress together, and building in opportunities for challenging and deepening understanding.
- deliver a curriculum which allows time and flexibility for children to fully master a concept before moving on.
- provide opportunities to develop fluency and to be able to apply this knowledge through reasoning and problem solving allowing for resilience to be developed.
- provide and make explicit, the opportunities to build year on year on their prior mathematical understanding.
- ensure there is continuity between year groups, phases and across the federation of schools, narrowing gaps in both one form entry schools.
- use 21st century technology such as online tools, resources, and expertise.
- provide a framework for teachers from which they have autonomy to deploy their specialised skills and learning strategies, whilst ensuring a consistent approach to the use of models designed to support children in their understanding.

Teaching and Learning – A Mastery Approach

The teaching and learning of mathematics at Castlefort Academy should include aspects of the following Mastery approach strategies in every lesson and/or over a series of lessons:



'Concrete, pictorial, abstract (CPA) is a highly effective approach to teaching that develops a deep and sustainable understanding of mathematics.'

Concrete

Concrete is the "doing" stage, using concrete objects to model problems. Instead of the traditional method of mathematics teaching, where a teacher demonstrates how to solve a problem, the CPA approach brings concepts to life by allowing pupils to experience and handle physical objects themselves. Every new abstract concept is learned first with a "concrete" or physical experience.

For example, if a problem is about adding up four baskets of fruit, the pupils might first handle actual fruit before progressing to handling counters or cubes which are used to represent the fruit.

Pictorial

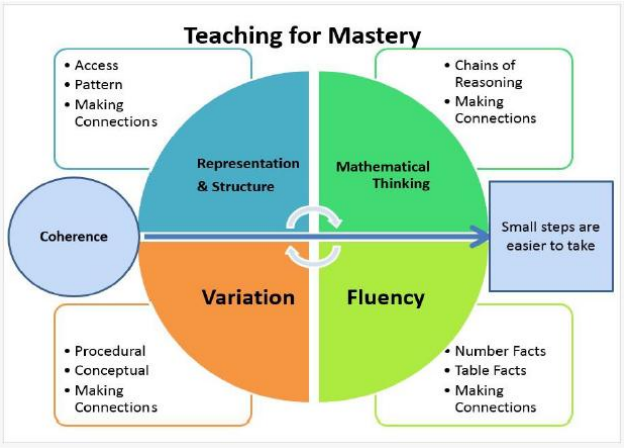
Pictorial is the "seeing" stage, using representations of the objects to model problems. This stage encourages pupils to make a mental connection between the physical object and abstract levels of understanding by drawing or looking at pictures, circles, diagrams or models which represent the objects in the problem.

Building or drawing a model makes it easier for pupils to grasp concepts they traditionally find more difficult, such as fractions, as it helps them visualise the problem and make it more accessible.

Abstract

Abstract is the "symbolic" stage, where pupils are able to use abstract symbols to model problems. Only once a child has demonstrated that they have a solid understanding of the "concrete" and "pictorial" representations of the problem, can the teacher introduce the more "abstract" concept, such as mathematical symbols. Pupils are introduced to the concept at a symbolic level, using only numbers, notation, and mathematical symbols, for example +, –, x, / to indicate addition, subtraction, multiplication, or division.

The Mastery Approach



What is Fluency?

Fluency comes from deep knowledge and practice. This is the first stage of pupils' understanding. Fluency includes conceptual understanding, accuracy, rapid recall, retention, and practice.

Accuracy – Pupils carefully completing calculations with no or few careless errors.

Pace – Pupils are able to quickly recall the appropriate strategy to solve the calculation and progress through a number of questions at an age appropriate pace.

Retention – Pupils will be able to retain their knowledge and understanding on a separate occasion to when the concept was first introduced.

The key to fluency is deep knowledge and practice and making connections at the right time for a child.

What is Reasoning?

Verbal reasoning demonstrates that pupils understand the mathematics. Talk is an integral part of mastery as it encourages students to reason, justify and explain their thinking. This is tricky for many teachers who are not used to focusing on verbal reasoning in their mathematics lessons. You might, for example, get young learners to voice their thought processes. Older students could take part in class debates, giving them the space to challenge their peers using logical reasoning.

Mathematical Talk

A mastery classroom should never be a quiet classroom. The way pupils speak and write about mathematics transforms their learning. Mastery approaches use a carefully sequenced, structured approach to introduce and reinforce mathematical vocabulary.

To encourage talk in mathematics, teachers may introduce concepts by including sentence structures (stem sentences). Pupils should be able to say not just what the answer is, but how they know it's right. This is key to building mathematical language and reasoning skills. This gives pupils the confidence to communicate their ideas clearly, before writing them down.

Example Stem Sentences:
If the dividend is a multiple of the divisor there is no remainder.
If the dividend is not a multiple of the divisor, there is a remainder.
The remainder is always less than the divisor.

Teachers then maintain a high expectation upon pupils to repeat and use the correct mathematical vocabulary to explain their understanding verbally and it will also be used in their challenge responses. By also displaying the vocabulary during the lesson, pupils will be able to use this independently.

When questioning and encouraging mathematical talk, teachers should provide regular, purposeful opportunities.

For example:
- Show me how to complete the calculation?
- Teach your friend how to complete the calculation
- How do you know which operation to use?
- Why have you chosen this method?
- How else can you represent this number?
- What have you learnt today?
- True or False
- Odd one out
- Sometimes, Always, Never

What is Problem Solving?

Mathematical problem solving is at the heart of the Mastery Approach. Pupils are encouraged to identify, understand, and apply relevant mathematical principles and make connections between different ideas. This builds the skills needed to tackle new problems, rather than simply repeating routines without a secure understanding. Mathematical concepts are explored in a variety of representations and problem-solving contexts to give pupils a richer and deeper learning experience. Pupils combine different concepts to solve complex problems and apply knowledge to real-life situations. Through problem solving, pupils are required to select their mathematical knowledge and apply this to a new concept.

Problem solving is more than just word problems, the following approach is applied to this style of question:
1) Read / look at the problem.
2) Understand the problem by underlining or discussing: What is the problem about?
3) Choose – Choose the operation required, the number facts or the approach.
4) Solve – Solve the problem by completing jottings on the page.
5) Answer – complete the answer to the problem.
6) Check – have I correctly answered the given problem or is there another step?

Mathematics Lesson Structure

The Foundation Stage

Mathematics is taught as part of the Area of Learning designated as 'Mathematics' in the statutory framework for EYFS September 2021.The children will receive some whole class and adult-led mathematics teaching and they have access to independent child initiated mathematics activities daily. Children are given opportunities to work on mathematics activities both indoors and outdoors. These activities are planned based on the main areas as outlined in the EYFS framework. As in the rest of the school, the mathematics plan builds on previous learning and allows time for children to develop 'mastery' in the key areas of mathematics without moving onto a new concept too quickly. Staff use 'Ten Town' resources to support the teaching and learning of numbers. 'Master the Curriculum' is the core scheme used for all areas of learning within mathematics in EYFS.

Key Stage 1 and 2

Mathematics lessons are one hour long and are taught five times a week (once daily), however teachers are able to timetable extra sessions to practise elements of mathematics e.g., times tables, number bonds. Children are taught age related material in mixed ability groups with the exception of children with SEND needs.

Teachers plan, modify and source activities and additional tasks using the White Rose Mathematics scheme of learning and teaching slides which offer support and scaffolding where appropriate. All children are challenged with reasoning and problem-solving opportunities each lesson. Further challenge is given to children who are able to progress further in their learning.

Expectations

- Morning mathematics tasks will be provided for children as they enter school. Some children will benefit from intervention group work during registration time – pre-teaching or gap task focus using Learning by Questions.
- Flashback 4 or Fluent in Five is completed by children at the beginning of the lesson.
- The learning of a key skill is completed through teacher modelling and guided practice.
- Children will complete an independent piece of work based on the teacher modelling that has been completed. This will be recorded in their exercise books.
- A challenge is completed every lesson based on the key skills that have been taught.

Resources

When resourcing and planning using the White Rose Mathematics planning, teachers also choose resources which complement it and follow the Mastery Approach: Concrete, Pictorial and Abstract. Teachers have the flexibility to choose resources they feel are most effective to support the needs of all learners (adaptive teaching) and ensure they achieve the aims of fluency, reasoning, and problem solving.

Resources are kept online, in classrooms and in the mathematics cupboards:

- A range of 'Concrete' manipulates e.g. fraction walls, counting beads, place value counters etc.
- 'Master the Curriculum' website
- 'Classroom Secrets' website
- Twinkl website – mastery documents
- NCETM website
- NRICH

Planning

The Foundation Stage

Planning is updated daily considering previous learning. This ensures the mathematics activities are appropriate and relevant to the children's learning needs and their interests. Mathematics activities in continuous provision are planned to consider both the children's interests and curriculum coverage.

Key Stage 1 and 2

The New National Curriculum has several strands:

- Number: number and place value, addition and subtraction, multiplication and division, fractions, percentages
- Measure
- Geometry: properties of shape, position, and direction
- Statistics
- Algebra
- Ratio and Proportion

Short term plans are produced weekly by individual class teachers. These plans include opportunities to review, teach, practise and apply skills in all strands. It also includes purposeful misconceptions for children to solve, new vocabulary for children to rehearse and scaffolding where appropriate.

Through Years 1 to 6 we use a coherent programme of high-quality materials and exercises, which are structured with great care to build deep conceptual knowledge, alongside developing procedural fluency. Our KS1 and KS2 teachers use White Rose Mathematics Premium lesson slides, which they adapt accordingly.

Children record their work and respond to additional problem solving and reasoning questions in their mathematics book. They might also use their mathematics book to record key number facts and make representations of mathematical concepts.

Feedback and Marking

Immediate intervention is essential. We achieve this through 'live marking' during lessons. A pupil should leave each lesson feeling successful and any misconceptions or concerns to be addressed immediately. We give children verbal feedback on their work whenever possible. We usually do this when the children are working during the lesson, although we sometimes give feedback on a particular lesson at the beginning of the next one. When lesson time does not allow for verbal feedback, we write comments on the children's work during marking. We may give written comments to children of all ages.

Having children assess their own or each other's work can be very effective, because it enables them to clarify their ideas on progressing to the next step.

We allow time during lessons for the children to absorb any comments written on their work, to answer any questions written on it by the teacher, and also to ask any questions of their own. There may also be improvements they can work on during this time.

Assessment

Assessment should be regular and used to inform planning and to make the Teacher Assessment judgements at the end of each term.

Formative Assessment
This is completed regularly during daily lessons and is used to inform future planning:

- Questioning
- Written Work
- End of blocked units White Rose Mathematics assessments

Summative Assessment

- Termly NTS tests
- TT Rock Stars Baseline Test (Year 2 – 6)
- Statutory testing – KS1/KS2 - Y2 and Y6
- Year 4 Multiplication Check

Monitoring and Review

Monitoring is carried out regularly by the Mathematics subject leader in the following ways:

- Informal discussion with staff and pupils
- Scrutiny of planning or books / lesson observation and informal drop-ins
- Observation of displays/ challenges
- Pupil progress discussions and analysis of data

Learning Walks will be used to monitor classroom practice, including:

- Learning walks
- Pupil voice
- Delivery of learning
- STEM sentence use
- TA provision including interventions

Feedback is provided to staff, senior leaders and local school committee members following monitoring. It is used to inform CPD needs. Any resource requirements are also identified and purchased according to needs and budget as stated in school development plan.

This policy is a practical working document for the teaching and learning of Mathematics throughout the school. It is therefore subject to regular review in the light of experience, monitoring and changes to national guidance.

Equal Opportunities

The school is committed to ensuring the active participation and progress of all children in their learning. All children will be given equal opportunities to achieve their best possible standard, whatever their current attainment and irrespective of gender, ethnic, social, or cultural background, home language or any other aspect that could affect their participation or the progress of which they are capable.

Inclusion

Taking a mastery approach, differentiation occurs in the support and intervention provided to different children, not in the topics taught, particularly at earlier stages. The National Curriculum states:

‘Children who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.’

There is little differentiation in the content taught but the scaffolding and resourcing individual children receive in class as they work through problems will differ, with higher attainers challenged through more abstract problems, which deepen their knowledge of the same content before acceleration onto new content. Children’s difficulties and misconceptions are identified through immediate formative assessment and addressed with rapid intervention – commonly through individual or small group support later the same day or within the lesson.

A range of inclusion strategies, disseminated by the SENDCO, are embedded in practice and teachers are aware of the special educational needs of the children in their Mathematics class, as well as those who have English as an additional language. Although the expectation is that the majority of children will move through the programmes of study at broadly the same pace, the 2014 National Curriculum states:

'Decisions about when to progress should always be based on the security of children's understanding and their readiness to progress to the next stage.'

If a child's needs are best met by following an alternative plan, including coverage of the content from a previous year, this will be overseen by the SENDCO, in collaboration with the class teacher and with the knowledge of SMT. Specific arrangements for the provision of children with SEND will be communicated to parents and carers during SEND reviews.

Role of the Subject Leader

- The subject leader will raise the profile of Mathematics at Castlefort Academy through best practice. They will model lessons, as appropriate to new staff, ECTs and peers to support continued professional development. They will ensure the high quality of Mathematics displays around the school, present certificates of achievement during end of term assemblies and involve the school in 'celebrations' of Mathematics, including participation in events such as 'World Mathematics Day'. The subject leader will support staff in providing opportunities for learning outside the classroom in Mathematics and will identify and organise opportunities which enable this, as appropriate.

- The subject leader will monitor progression and continuity of Mathematics throughout the school through lesson observations and regular monitoring of outcomes of work in Mathematics exercise books.

- The subject leader will ensure that all staff have access to year group plans and the relevant resources which accompany them.

- The subject leader will monitor children's progress through the analysis of whole school data. They will use this data to inform the subject development plan which will detail how standards in the subject are to be maintained and developed further.

- The subject leader will, on a regular basis, organise, audit, and purchase central and class-based Mathematics resources.

- Through ongoing involvement in the DfE funded Mathematics Hubs programme, the subject leader will keep up to date on current developments in Mathematics education and disseminate information to colleagues.

- The subject leader will develop opportunities for parents/carers to become more involved in Mathematics education.

- The subject leader will ensure that all staff have access to professional development including observations of outstanding practice in the subject.