

Forest Oak School



Curriculum Intent, Implementation and Impact statement for *Mathematics*

Curriculum Area/Subject Lead(s):

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Intent

At Forest Oak our core aim is to foster a love of learning of Mathematics through exploration opportunities that develop a real-life hands-on approach. We believe that Mathematics is a key skill that helps us develop a sense of the world around us. We want our learners to enjoy their learning through doing, using the CPA teaching approach (concrete – pictorial – abstract).

At Forest Oak, we want Mathematics to be enjoyed, by creating a fun and engaging curriculum. We want our learners to develop knowledge and understanding of mathematical skills and concepts and how they can be transferred to their lives. Children will be given opportunities for practical activities, role play and mathematical board and ICT games.

We will provide a creative learning journey that is rich in developing all learners' mental and oral strategies with an emphasis on number bonds and multiplication tables. We will encourage the use of mathematical vocabulary, whilst encouraging problem solving and reasoning techniques for those who are able to access it.

The Mathematics curriculum has been designed to offer inclusive pathways for all learners that are child-centred and build upon existing skills. The two main pathways are Birch (Semi-formal) and Ash (Formal) which are designed to enable pupils to develop the knowledge and skills required for their next stage of learning and education.

Personalised planning enables all pupils to reach their full potential regardless of their ethnic, socio-economic background, race, gender or ability. Pupils' individual talents and interests are valued and incorporated into learning opportunities which ensures that pupils' are motivated to participate and foster a love of learning Mathematics.

Our Sensory Pathway (found within Birch) – is designed to nurture and develop learning through play; predominantly concrete and pictorial, slowly moving to abstract. A multi-sensory approach, developing early communication skills, social and emotional development will be used in order to develop greater engagement and cognition of mathematical thinking and learning.

Our Birch Pathway – is designed to provide learners with the knowledge and skills they need for supported work. We want our learners to leave us as happy, confident and independent learners who have a good grasp of mathematical concepts so that they are able to use to enable them to thrive in education, future employment and life.

Our Ash Pathway – is designed to promote independence in order to access the accreditation they need to access further, high level or wider qualifications. It is destination driven, with core and specific work knowledge and skills being developed gradually through the curriculum in Key Stage 2, 3 and 14-19 through a sequential pathway.

A fluid approach is adopted to enable learners to move between pathways to follow different elements of pathways that ensures that learners receive appropriate levels of challenge.

Implementation

The Mathematical curriculum at Forest Oak is shaped by our school vision which aims to enable all children, regardless of background, ability, additional needs, to flourish to become the very best version of themselves they can possibly be.

Mathematics is taught using a combination of the following approaches: Concrete Pictorial Abstract (CPA) mastery approach, including Problem Solving, Fluency and Reasoning. The Concrete Pictorial Abstract (CPA) approach is a system of learning that uses physical and visual aids to build a learner's understanding of abstract topics.

Concrete is the “doing” stage. During this stage, learners use concrete objects to model problems. This approach brings concepts to life by allowing children to experience and handle physical (concrete) objects. Every abstract concept is first introduced using physical, interactive concrete materials.

Pictorial is the “seeing” stage. Here, visual representations of concrete objects are used to model problems. This stage encourages learners to make a mental connection between the physical object they just handled and the abstract pictures, diagrams or models that represent the objects from the problem. The link from Concrete to Abstract helps students visualise abstract problems and make them more accessible.

Abstract is the “symbolic” stage, where learners use abstract symbols to model problems. Students will not progress to this stage until they have demonstrated that they have a solid understanding of the concrete and pictorial stages of the problem. The abstract stage involves the teacher introducing abstract concepts (for example, mathematical symbols). Learners are introduced to the concept at a symbolic level, using only numbers, notation, and mathematical symbols (for example, +, −, ×, /) to indicate addition, multiplication or division.

Mathematics will be taught using this CPA mastery approach to enable depth and understanding of concepts taught. A typical lesson should follow the structure set out below:

- Explore: identify a problem and allow exploration time
- Structure: draw learners's ideas and methods and assess and identify misconceptions in preparation to teach new methods.
- Guided Practice: model using CPA and move to targeted questions to practice using new methods. Teacher to assess understanding.
- Practice: completion of precise questions independently or in pairs. For those learners that can, this should be completed without teacher support (research suggests that learners must apply method more than once to retain it).
- Apply: Learners should be given opportunities to apply the methods to problems and new situations (deeper thinking questions).

Building these steps across a lesson can help learners better understand the relationship between numbers and the real world, and therefore helps secure their understanding of the mathematical concept they are learning.

In Key Stage 3, learners are streamlined into accessing the mathematics curriculum (White Rose) at the most appropriate level for them. This ensures that all learners receive the correct supported needed for them to make the best progress and embed their mathematical skills and knowledge.

Impact

Learners often find maths difficult because it is abstract. The CPA approach helps to learn new ideas and build on existing knowledge by introducing abstract concepts in a more familiar and tangible way.

Although CPA has three distinct stages, a skilled teacher will go back and forth between them to reinforce concepts. The three pathways (Sensory, Birch and Ash) allows for each learner to develop and progress at the necessary level and pace that will enable them to reach their potential.

This approach to teaching will:

- Encourage visualisation: Can the learner see the number as an amount? Are they using number bonds to picture groups?
- Encourage verbal communication: Enable learners to talk about 'how' they are learning, explaining what they understand.
- Develop a 'can do' attitude in our learners, especially when problem solving and pattern investigating.
- Enable learners to confidently reason about their mathematics, using a suitable range of mathematical vocabulary, recognising its importance for communication and deeper thinking.

Fluency will develop using the CPA approach in each Pathway where once content is taught, using a range of representations, children will develop an understanding and have sufficient time to practice what has been taught

As a result of the Mathematical curriculum, learners at Forest Oak develop a strong understanding of the importance of the role that mathematics plays in their lives.