The Meadows Primary School

Mathematics Policy

Version Control

Version	Date	Purpose	Author
2	27/04/2022	Update of previous policy	L.Heath

Contents

Intent 3
Implementation 3
Impact 3
Appendices 4
Appendix 1 - Planning & lesson design 5
CPA approach 6
Symbols 6
Cold tasks 6
Working walls 6
Appendix 2 - Lesson format (approx. 50-60 mins) 7
Fluency 8
Appendix 3 - Marking and feedback 9
Books & written work 9
Appendix 4 - Other policies 10

INTENT

At The Meadows, our aim is to equip all pupils with the skills and confidence to solve a range of problems through fluency with numbers and mathematical reasoning in line with national expectations. Our curriculum will challenge and motivate children as well as being enjoyable and successful, allowing the children to become the best learners they can be.
All three aims of the National Curriculum *(Fluency, Reasoning & Problem Solving)* are evident within the daily maths lesson and are developed consistently over time.
Children are encouraged to see the importance of mathematics that surrounds them every day and enjoy developing vital life skills in this subject.

IMPLEMENTATION

Our mastery approach to the curriculum is designed to develop children's knowledge and understanding of mathematical concepts from Early Years through to the end of Year 6.
To ensure consistency and progression, we follow White Rose Schemes of Work as a fundamental foundation to support teachers. This curriculum is cumulative and revisited in different contexts regularly, emphasising the links between areas of maths. We emphasise representation and structure by using Concrete-Pictorial-Abstract approach (CPA) to support conceptual understanding within a mixed ability setting. In this way, children experience a 'hands-on' learning approach when discovering new mathematical topics, allowing them to have clear models and images to aid their understanding.
(See Appendix for supporting information)

IMPACT

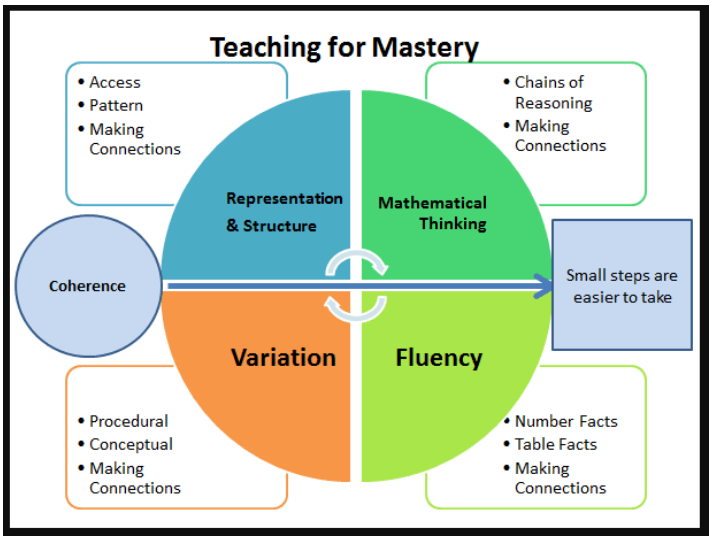
As a result of our Maths teaching, children:

- are engaged and challenged
- demonstrate a quick recall of facts and procedures
- can confidently talk about Maths and their learning
- discuss links between Mathematical topics and make connections
- use a variety of resources to support their own learning
- draw a variety of different representatoins of mathematical concepts
- are regularly monitored and assessed to ensure progress is made

APPENDICES

Appendix 1 - Planning & Lesson Design

Our teaching for mastery is underpinned by the NCETM's FIVE BIG IDEAS:



Opportunities for ***Mathematical Thinking*** allow children to make chains of reasoning connected with other areas of their mathematics. A focus on ***Representation and Structure*** ensures concepts are exposed and explored using concrete, pictorial and abstract representations, the children actively look for patterns and generalise whilst problem solving. ***Coherence*** is achieved through the planning of small connected steps to link every question and lesson within a topic. Teachers use both procedural and conceptual ***Variation*** within their lessons and there remains an emphasis on ***Fluency*** with a relentless focus on number and times table facts.

At The Meadows, teachers plan lessons which are carefully sequenced. Predominantly, teachers follow a modified version of White Rose Schemes of Learning, where learning is broken down into small steps, keeping learners together. By using the resources across the school, from EYFS to Year 6, we can ensure consistency of approach as well as consistency of the mathematical elements and comprehensive coverage of the curriculum. It will also help to support those who require more time and visual representation to grasp fundamental concepts as well as those who require challenging further to achieve Greater Depth.

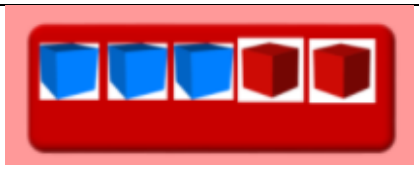
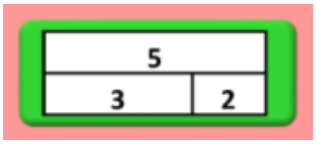
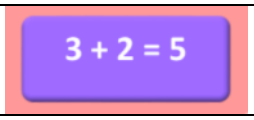
Although EYFS predominantly follow the White Rose Schemes of Learning, in addition, teachers refer to the New Early Years Curriculum (2021) and Early Learning Goals to ensure coverage and progression through the Foundation Stage Curriculum.

There is no official planning format for mathematics for teachers. Instead, they use PPA time to produce high quality flipcharts with mathematical rich tasks. The Maths Subject Leader monitors lesson flipcharts on a regular basis and gives feedback on this. Teachers use a specific set of resources to support the planning process including White Rose Premium Resources, I See Reasoning/Problem Solving Materials and NRich.

To emphasise and embed key learning points and ensure learning is as fully developed as possible for all children, teachers plan with the following elements:

Planning for misconceptions	Key questions	CPA approach
High quality resources and tasks	Conceptual and Procedural Variation	Sentence Stems
Modelling and scaffolding	Retrieval and Retention	Balance of fluency, reasoning and problem solving

CPA Approach

Concrete 'doing'	Using concrete objects to solve problems. It brings concepts to life as children have the opportunity to be hands on and use physical objects to aid them in developing their understanding.	
Pictorial 'seeing'	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.	
Abstract 'symbolic'	Children are able to use abstract symbols to model and solve maths problems.	

Symbols

Teachers use a consistent symbol system when planning flipcharts for each lesson

	CPA approach – apparatus needed
	Anchor Task (discussion based task)
	Modelled slide I do – We do – You do format is followed for explicit modelling of reasoning
	Copy of slide printed off so children can annotate findings/working out
	Explore More – built in challenge element for each stage

Cold Tasks

Prior to beginning a unit of work, children will carry out a short 'cold task'. Teachers use diagnosticquestions.com as a diagnostic tool to gauge the understanding of children before planning that unit and this will be adapted and tailored according to the results.

Working Walls

Working Walls will be utilised within daily teaching by both teachers and children. They should be an extension of the lesson displaying information such as mathematical vocabulary, models (from previous lessons), hints/sentence stems. A Working Wall will be developed/added to over the course of the unit.

Appendix 2 - Lesson Format (approx. 50-60 mins)

FLASH BACK FOUR	Revisiting concepts Series of quick questions covering something from the previous lesson, previous week or previous topic. Recaps on essential skills and ensures they are regularly revisited and retrieved to strengthen retention
ANCHOR TASK	Problem, question, scenario or picture given to pupils at the start of the lesson that provides opportunities to activate prior knowledge, respond to, collaborate, ask questions and use mathematical rich vocabulary to find solutions. 'Low floor – high ceiling' tasks engages all children at all levels. Task shared with the children with no introduction or sharing of the lesson objective. Children can move between a Concrete-Pictorial-Abstract (CPA) model during lessons where they can make sense of, and develop fluency in the use of, abstract symbols. Misconceptions are addressed. Conceptual/Procedural Variation used to promote deep, sustainable learning.
CORE LEARNING MODELLED, GUIDED & INDEPENDENT PRACTICE (Small steps)	Lesson progression guided by the White Rose small step structure. Lessons are episodic – allowing for small step teaching and short independent tasks to gain knowledge of children's understanding. Part of the lesson where children 'practice' the mathematics they have learnt. Children do not follow exercises that are too repetitive but instead engage in activities which provide the opportunity to develop both procedural and conceptual fluency. Conceptual and procedural variation is used. Teachers use continuous AfL to gauge pupil understanding – *for example:* moving those children on who are secure; forming guided groups for those who need further modelling or scaffolding, having different starting points for children who are secure with concepts but need reasoning/problem solving context Independent tasks for secure learners should require children to think differently and draw on knowledge, make connections with other areas of maths and/or explain their thinking. Sentence stems may be used to reiterate learning. 'Explore More' questions for those that need further challenge during the episodic/small step teaching parts as well as independent tasks are easily available and planned for Children should be exposed to a balance of fluency, reasoning and problem solving throughout the lesson and modelled teaching should be included regularly – 'I do – We do – You do' approach – displaying on Working Wall as appropriate

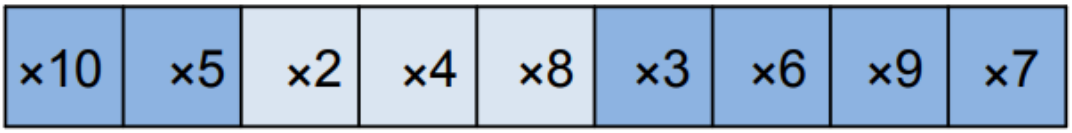
Maths sessions in EYFS are structured differently due to the nature and needs of our youngest children. Children in our Foundation Stage complete a variety of adult led and independent Maths activities each week. There are continuous provision resources linked to Maths in all Reception classes which children access during child-initiated learning times.

Fluency

At The Meadows, we want to develop children's fluency with basic number facts. We believe that spending a short time every day on these basic facts, with a target focus in each year group, will quickly lead to improved fluency and a rapid recall of facts.

EYFS	• Say 1 more than a number to 10 • Say 2 less than a number to 10 • Doubles to 5 • Adding 0
Year 1	• Adding 0,1,2 and 10 to a number • Knowing doubles for numbers 1-10 • Knowing Number Bonds (pairs) to 20
Year 2	• Knowing doubles for numbers 1-20 and corresponding halves • Knowing near doubles for numbers to 10 • Knowing Number Bonds (pairs) to 20 • Bridging and Compensating across 10 • Times tables x2, x5, x10
Year 3	• Times tables x3, x4, x8, x0
Year 4	• Times tables x6, x7, x9, x11, x12
Year 5	• Consolidation of tables facts to 12 x 12 including corresponding division facts
Year 6	• Use knowledge of tables facts to generate new facts *e.g. multiples of 100/1000, decimals*

The learning of tables will be done in the following order to provide opportunities to make **connections:**



At The Meadows, being fluent means:

- Recall the fact
- Say the inverse
- Draw a model
- Draw another model
- Recognise in different forms
- Relate to real-life example
- Oral explanation in context
- Written explanation in context

Appendix 3 - Marking and Feedback

Books & Written Work

Children are encouraged to record in their books with carefully chosen activities depending on their level of understanding. In Key Stage 1& 2, children work in squared books and adhere to the layout agreed within the Presentation Policy and Marking Policy.

IN EYFS, weekly maths work, both guided and independent, will be recorded in a LEARNING JOURNAL. Each weekly double-page will document the learning and progress of an aspect of maths over the week and will include a range of independent and whole class activities, written and oral responses and observations made by the Teacher/Teaching Assistant. The children will be tracked to ensure that each child regularly contributes the Learning Journal and evidence of children exceeding the Early Learning Goal for Mathematics will be included as appropriate.

All adults in the classroom are encouraged to move freely around the room and give feedback to children throughout a lesson, either verbally or written – 'live marking'. Adults are encouraged to carry out 'pen in hand' marking as they move around to monitor the learning. Where appropriate and where small errors have been detected, annotations are made with red pen by adults, with any subsequent corrections or changes made in green pen by the pupil.

Where there is evidence of some errors, the teacher may regroup the children to have a guided group where an alternative model may be explored before allowing the children to continue with the independent task/correct previous work. The Teaching Assistant may be directed to support children on a 1:1/1:2/1:3 basis before allowing them to correct work. Evidence of multiple errors may result in the teacher adapting the next lesson.

Children are also encouraged to self-mark where appropriate as we believe and evidence show pupils benefit from doing this (Black and Wiliam 1998). This way they can identify themselves the facts, strategies and concepts they know well and those which they find harder and need to continue to work on.

Appendix 4 - Other Policies

For reference, please also refer to:

- Presentation Policy
- Marking Policy
- EYFS/KS1/KS2 Calculation Policies
- Assessment Policy