

Policy for the Teaching and Learning of Maths at Armley Park Primary School

Introduction:

It is our aim at Armley Park Primary School that all children should feel confident and enthusiastic about maths and enjoy their mathematics learning. In maths lessons, children are taught a range of strategies to develop their mathematical fluency and calculation skills. A mastery approach is adopted by the school so that children are able to apply their knowledge to use mathematical reasoning and solve challenging problems. We follow the White Rose Maths Hub scheme of work. This ensures that children work through the curriculum in a way which allows them to build on prior learning effectively. This allows children to make links between different concepts, and leads them to have a deep, long-term understanding of the subject.

Purpose of the Maths Policy:

All children should feel confident and enthusiastic about their mathematics learning. They should be given the skills required to persevere with challenging problems, and they should feel empowered to discuss their learning confidently using the correct terminology. New concepts are introduced using the 'Concrete, Pictorial and Abstract' approach to develop a strong conceptual understanding. Pupils are encouraged to explore new learning through varied and frequent practice. Children should be taught to confidently recall key mathematical facts and to calculate accurately and efficiently.

The development of mathematical reasoning is encouraged at every step of the learning process, with children regularly being prompted to discuss their understanding and make rich links between different areas of mathematics. Children are taught to approach problems with increasing levels of confidence, by drawing upon their solid mathematical understanding and working systematically and accurately. Children should feel confident taking their learning beyond mathematics lessons, being able to apply their problem-solving skills to other lessons, as well as in everyday life.

Aims of the Maths Policy:

A 'mastery' approach has been adapted and implemented at Armley Park Primary School for the planning, delivery and engagement with mathematics. We use the White Rose Maths Scheme of Work to timetable mathematical units that are explored progressively, drawing on resources, data and suggestions from reliable sources such as NCETM and nrich.co.uk to link mathematical talk and knowledge. When planning for objective coverage, teachers are expected to take the following mastery strategies into account:

- Small steps
- Ping pong style of delivery
- Implementing the Concrete, Pictorial and Abstract (CPA) approach to introducing, exploring and applying mathematical concepts
- Applying/using the Bar Model approach as a strategy to approach calculation/problems
- Considering key questions and mathematical vocabulary at the point of unit planning
- Multiple opportunities for verbal and written/drawn reasoning (explaining and using mathematical vocabulary to explain methods or reasoning) within unit exploration
- Inclusion of relevant problem-solving opportunities, where children are expected to draw on and apply multiple concepts to address or approach a challenge
- Modelling of all skills and approaches
- Modelling and sharing of efficient and accurate application of methods
- Opportunities to explore maths concepts/objectives at 'greater depth'
- Include all learners, providing relevant support for those with additional needs (educational, medical or otherwise)

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Objectives of the Maths Policy:

All children should feel confident and enthusiastic about their mathematics learning. They should have opportunities to explore mathematical concepts on a declarative and procedural basis to ensure they develop fluency in new areas of learning. Once confident, children should transform this knowledge into strategies which enables them to reason and solve problems. The exploration of mathematics should be interactive and engaging, with content made relevant to children's real-world experiences and contextualised to support consolidation and retention of knowledge and skill. Approach and response to reasoning activities should improve term on term, with the expectation that by the end of the year, children are happy to accurately define and use mathematical vocabulary introduced by their teacher, as well as complete stem sentences to complete mathematical statements or reasoning.

Curriculum and School Organisation:

Mathematics is a creative and highly interconnected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

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 nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Mathematics is an inter-connected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage.

Pupils 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.

Maths Curriculum Planning:

EYFS

Planning EYFS Mathematical Development is planned and taught through whole class, daily maths lessons which follow mastery in maths theory and practice. Adult led learning linked to NCETM progression documents, White Rose maths guidance and development matters criteria, all

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ensure suitable challenge through open ended, investigative learning and the teaching of concrete maths concepts. A dedicated maths area ensures children understand how resources can help them to learn and encourages children to develop their own interests linked to maths. Maths is also a core element of learning across provision, with opportunities inside and outdoors linked to mathematical concepts, problem solving, opportunities for reasoning and playing games.

KS1 and KS2 White Rose Maths

KS1 and KS2 will follow the White Rose Maths Hub (WRMH) scheme of work for teaching mathematics. This document will inform lesson plans. Objectives should be clear for individual sessions with teachers using their own judgement as to the length of time each individual small step from the WRMH scheme should take to deliver. Individual lessons should be tailored to the needs of the learners and in consideration of the subject matter being learned. A variety of strategies should be used to deliver quality lessons for all pupils. A mixture of whole class input, group discussion, plenaries, independent and peer-supported work, as well as one-to-one feedback throughout the lesson should all be used with the express aim of moving learning forward and developing children's conceptual understanding of the subject matter. Independent tasks will be carefully planned. Children will access activities which lead them to make links between key concepts, and which support progression through a lesson's objective. Teachers should take every opportunity to assess children through questioning and use this formative assessment to again move learning forward and deeper. Although there is no defined structure to any one session, teachers should ensure that individual lessons give the children the chance to extend or deepen their knowledge of given concepts.

Assessment in Maths

Formative

Teachers should use effective questioning as their first line of assessment and act on children's verbal and written responses immediately during lessons. After teaching, teachers should use the end of block assessments produced by the WRMH along with their termly assessments to assess gaps in children's knowledge. This information should then inform future planning.

Summative

Teachers will use NTS assessments during assigned assessment weeks. These tests should be analysed thoroughly to develop an understanding of the topics and concepts children are failing to develop a sufficiently deep understanding of. This data should inform future planning at all levels.

Children throughout EYFS are assessed against the Mathematical Development criteria identified in development matters. Judgements against the early learning goal and exceeding descriptors are made by the end of EYFS.

Resources:

Children will have access to a wide range of mathematical resources. Children are given the chance to work with resources such as (but not exclusively) 10 frames, counters, bead strings, dice, white boards and Base 10 equipment to support their understanding of increasingly challenging subject matter. Children should aim to develop their knowledge using these resources to create models and images to explore and explain their conceptual understanding. This firm basis in conceptual understanding will allow children to then feel secure when moving on to more formal methods of solving problems.

Monitoring and Evaluation of Maths throughout the school:

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The Maths subject leader takes an overview of standards and of the quality of teaching in Maths. Teachers' assessment information is shared with the Senior Leadership Team and is used to plan and address areas of need.

The work of the subject leader also involves supporting colleagues in the teaching of Maths, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in the school. The application of this Maths policy will be monitored by the curriculum leader.

Policy Written by Alastair Everatt (Maths Leader)

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