



Priestsic Primary and Nursery School Maths Policy

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By: Amy Marriott - Maths Lead

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Introduction

Mathematics is not a subject in its own right. It is a skill which is acquired through being taught mathematics effectively. Mathematics helps children to make sense of the world around them through developing their ability to calculate, to reason and to solve problems. It enables children to understand and appreciate relationships and pattern in both number and space in their everyday lives. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics.

Rationale

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.

(New National Curriculum July 2014)

Following the introduction of the new National Curriculum in 2014 the emphasis has been to ensure that all children:

- Become FLUENT
- REASON and EXPLAIN mathematically
- Can SOLVE PROBLEMS

This means that children need to be regularly exposed to opportunities involving increasingly complex problem solving which allows them to apply their maths knowledge. In doing so they should be encouraged to develop an argument and line of enquiry which they can

prove and justify using mathematical vocabulary. This includes the ability to break down problems, both routine and non-routine, into a series of steps.

At Priestsic Primary and Nursery School, we aspire to help all our children acquire a love for learning maths and to give them the skills, knowledge, understanding and confidence to be able to explain and apply their mathematical knowledge. We believe all children can achieve in mathematics and teach for a secure and deep understanding of mathematical concepts through manageable steps. We view mistakes and misconceptions as an essential part of the learning process. Children will progress by building on previous knowledge and skills, and apply these to a wide variety of contexts both within maths and across the curriculum. Our children will be appropriately challenged and supported through varied fluency, reasoning and problem-solving tasks. Irrespective of personal starting points, children will explore maths in depth and use a range of mathematical vocabulary to reason and explain. They will spend time becoming true masters of content, applying and being creative with new knowledge in multiple ways.

Aims

We aim for all children to:

- Become fluent in the fundamentals of mathematics so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- Be able to solve problems by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios.
- Reason mathematically by following a line of enquiry and develop and present justification, argument or proof using mathematical language.
- Have an appreciation of number and number operations, which enables mental calculations and written procedures to be performed efficiently, fluently and accurately to be successful in mathematics.
- At Priestsic Primary School, we aim to teach maths in a way that:
 - delivers maths in line with new National Curriculum guidelines
 - ensures the delivery of maths is filled with cross curricular opportunities
 - creates a lively, exciting and stimulating environment in which the children can learn maths
 - promotes the concept that acquiring maths knowledge and skills provides the foundation for understanding the world around the children
 - develops mental strategies
 - encourages children to use mathematical vocabulary to reason and explain
 - stimulates and develops a curiosity for maths
 - challenges children to stretch themselves and take risks in their learning
 - creates a sense of awe and wonder surrounding maths
 - ensures children have the ability to instantly recall key facts

Approach

At Priestsic Primary School, we use a variety of curriculum resources to enhance the implementation of the National Curriculum Programs of Study for Mathematics, including: White Rose Maths, Maths Shed and Testbase to ensure continuity and progression in the teaching of mathematics. It is important that children are allowed to explore maths and present their findings not only in a written form but also visually; to that end, the school has embraced the CPA approach: concrete, pictorial, abstract. This will allow the children to experience the physical aspects of maths before finding a way to present their findings and understandings in a visual form before relying on the abstract numbers. In all classes children are taught in a variety of flexible groupings; whole class, groups, pairs, one to one, relevant to the task in hand, and teaching is adapted in order to make the learning journey accessible for all learners, as well as providing an important element of challenge. Teachers apply adaptive teaching techniques whereby tasks are ENABLED to ensure all learners can access the small step of learning, and EXTENDED to ensure learners can deepen their understanding through challenges. Where appropriate these groups/individual children are supported by Teaching Assistants. In line with the 2014 curriculum, and using guidance from the White Rose Maths Hub, the school adopts a mastery approach to teaching. Staff are kept up to date on current thinking, new teaching methodologies and ideas by the subject leader through staff meetings and INSET days. CPD will be available, where possible, for staff who need to improve their understanding of the requirements of the National Curriculum, new methodologies and assessment/testing arrangements. It is important that parents and carers are actively involved in the children's education. In order to help keep them informed of what is happening within school we aim to run information sessions which will look at current developments within the school, projects in which we are involved, new methodologies for delivering the teaching of Maths and also any new statutory changes such as curriculum or assessment/testing arrangements.

Lesson Structure

Teachers will use Rosenshine's Principles of Learning to structure their maths lesson.

Some steps won't be relevant to a particular lesson.

Lesson Part	Rosenshine's Principles	Content	Purpose
Daily Recap	Principle 1 - Daily review Principle 10 - Weekly & monthly review	<ul style="list-style-type: none">• Prior knowledge questions (FB4)• Frequent quizzes - last lesson, last week, last term, last year	<ul style="list-style-type: none">• To provide assessment information• To embed learning into long term memory

			<ul style="list-style-type: none"> Recall number of facts including multiplication tables Quick Maths - daily mental arithmetic practise. 	<ul style="list-style-type: none"> To provide a "thread" from previously learnt material to new learning
Anchor	Anchor Task	Principle 2 - Present new material in small steps	<ul style="list-style-type: none"> Paired mathematical exploration Paired mathematical discussion Application of previously learnt material 	<ul style="list-style-type: none"> Collaborative exploration and application of prior learning To develop procedural fluency and independent problem solving
	Let's Learn	<p>Principle 2 - Present new material in small steps</p> <p>Principle 3 - Ask questions</p> <p>Principle 4 - Provide models</p>	<ul style="list-style-type: none"> Step by step use of worked examples - provide clear instructions Pictorial representations to support understanding - utilising dual coding theory Use Stem sentences Thinking aloud as a mathematician Questioning to develop conceptual understanding Pre-empting and addressing misconceptions Explicitly teaching new mathematical language 	<ul style="list-style-type: none"> To ease cognitive load To provide clear models and worked examples To provide success criteria To model the use of mathematical vocabulary in context

<p>Guided practice</p>	<p>Principle 5 - Guide student practice</p> <p>Principle 3 - Ask questions</p> <p>Principle 6 - Check student understanding</p> <p>Principle 8 - Scaffold difficult tasks</p>	<ul style="list-style-type: none"> • Paired mathematical discussion • Teacher on the move - checking, correcting, reteaching, questioning to assess understanding • Teacher identifying children who may require further explicit instruction and guided practice • Identifying and addressing misconceptions 	<ul style="list-style-type: none"> • Identify children who require support • Provide scaffolds to enable all learners to succeed • Provide children with in the moment feedback • To provide children with the understanding needed to work independently
<p>Independent work</p>	<p>Principle 9 - Independent practice</p> <p>Principle 6 - Check student understanding</p> <p>Principle 7 - Obtain high success rates</p>	<ul style="list-style-type: none"> • Teacher on the move - monitoring, correcting and reteaching • Teacher working with a group who require further instruction • Providing scaffolds where needed • Provide challenge through complexity of task where appropriate 	<ul style="list-style-type: none"> • Mastery over learning for automatic retrieval • To obtain high success rates • To develop children as confident and independent mathematicians
<p>Review</p>	<p>Principle 6 - Check student understanding</p> <p>Principle 7 - Obtain high success rates</p>	<ul style="list-style-type: none"> • Children mark their own work • Ask children to explain what they have learned • Re-teach material if needed 	<ul style="list-style-type: none"> • Provide children with formative feedback • To obtain high success rates • To ensure children are ready for the

		<ul style="list-style-type: none"> • Provide further examples to develop depth of understanding and mastery 	next step of their learning
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Planning and Assessment

Teachers will plan and deliver lessons that suit the particular learning styles of the children within the year group. They will use their own judgement and use of formative assessment to ensure a flexible approach is adopted which recognises the pace of learning within the classroom. Planning is organised to ensure deeper understanding: this is achieved through longer blocks of learning with smaller steps to success. Children will be given the opportunity to engage in fluency, reasoning and problem-solving activities to demonstrate their understanding. In order to inform planning and to assess children's progress, teachers will carry out a range of summative and formative assessments and keep a record of termly teacher assessments on Eazmag. Teachers conduct pre- and post- block assessments to help inform curriculum focus and possible intervention needs. This is also a useful tool to analyse progress within an individual block of learning. Termly, children will be assessed through the application of tests; this summative assessment, alongside Teacher Assessments, will be used to identify next steps and therefore inform planning. Children will be provided with feedback either verbally or through written marking. Often, in order to clarify understanding of a concept during the lesson, children will be given verbal feedback. Misconceptions are discussed with the children at the earliest opportunity, and often inform important learning opportunities within the lesson. At Priestsic Primary School we embrace misconceptions and mistakes, as they help children learn and grow. We want to normalise mistakes and misconceptions, and for children to ultimately see these as a positive part of the learning process.

Inclusion

In line with the School's Inclusion Policy, each child will have equal entitlement to all aspects of the Maths curriculum and to experience the full range of Maths activities. Therefore, in delivering Maths, care will be taken to ensure that a variety of learning styles are accessed and teaching methods adopted. Intervention groups will take place both within the Maths lesson and outside; these sessions may be delivered by the teacher or teaching assistant and may involve individual or small group work, accessing both ends of the learning spectrum.

Review

This policy will be reviewed every year but will be updated before that time if necessary. Any changes will be verified with senior management.