

Teaching Mathematics at Priory Primary School

The Importance of Mathematics

Mathematics equips pupils with a uniquely powerful set of tools to understand and change the world. These tools include logical reasoning, problem solving skills and the ability to think in abstract ways.

Mathematics is important in everyday life, many forms of employment, science and technology, medicine, the economy, the environment and development, and in public decision making. Mathematics is a creative discipline. It can stimulate moments of pleasure and wonder when a pupil solves a problem for the first time, discovers a more elegant solution to that problem, or suddenly sees hidden connections.

Aims

Aims of the national curriculum:

- developing confidence and competence with numbers and measures – the proficiency of Maths
- providing opportunities to apply mathematical learning to a range of real-life contexts in mathematics and in other subject areas
- encouraging the skills required to communicate ideas about mathematics
- fostering a sense of inquiry and an enthusiasm and enjoyment for the nature of mathematics
- an ability to think clearly and logically, with sufficient flexibility of mind, to work independently
- the acquisition of appropriate mathematical language and the ability to describe accurately and unambiguously.

To fulfil these requirements our pupils should:

- have a sense of the size of a number and where it fits into the number system;
- know by heart number facts such as number bonds, multiplication tables, doubles and halves;
- use what they know by heart to figure out answers mentally;

- calculate accurately and efficiently, both mentally and with pencil and paper, drawing on a range of calculation strategies
- make sense of number problems, including non-routine problems, and recognise the operations needed to solve them;
- explain their methods and reasoning using correct mathematical terms;
- judge whether their answers are reasonable and have strategies for checking them where necessary;
- suggest suitable units for measuring, and make sensible estimates of measurements;
- explain and make predictions from the numbers in graphs, diagrams, charts and tables;
- develop spatial awareness and have an understanding of the properties of 2-D and 3D shapes
- use patterns and relationships in mathematics to solve puzzles and problems about numbers and shapes

What does the Mathematics curriculum look like at Priory?

We uphold and nurture the following underlying principles for the teaching and learning of mathematics in our school, aiming 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 and procedural 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, e.g. “Convince me that...” or “I know that...so...”
- 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. The Bar Model device is used throughout the school to support problem solving.
- Are taught through the Concrete → Pictorial → Abstract sequence, known as ‘Make It! Draw It! Write It! This ensures they gain a thorough understanding of the mathematical concepts/skills they are learning.
- Should be given the opportunity for every relevant subject to develop their mathematical fluency and mathematical skills.

Using the White Rose Maths Scheme, the philosophies embedded within as well as its Programmes of Study, we aim to develop:

- a positive attitude towards mathematics and an awareness of the fascination of mathematics
- competence and confidence in mathematical knowledge, concepts and skills
- an ability to solve problems, to reason, to think logically and to work systematically and accurately.
- initiative and an ability to work both independently and in cooperation with others
- an ability to communicate mathematics and mathematically
- an ability to use and apply mathematics across the curriculum and in real life
- an understanding of mathematics through a process of enquiry and experiment

The approach to the teaching of mathematics within the school is based on these key principles:

- a mathematics lesson every day
- a clear focus on posing a problem through Discover (e.g. 'How can we work this out?'), seeking a solution (e.g. investigating using manipulatives, diagrams, jottings...), teacher modelling, developing mathematical thinking, interactive oral work both with the whole class and with groups
- an emphasis on fluency, reasoning, using and applying knowledge and skills and problem solving
- Manipulatives are used to support concrete learning
- Procedural and Conceptual Variation is recognised as necessary for mastery in learning.
- The 'Bar Model' is promoted and modelled by all staff as a vehicle to aid problem solving.

- Times tables and related facts are a focus through Rockstars and a dedicated extra session during the day.

In Foundation Stage, the children participate in an hour long lesson daily, taking advantage of the outdoor area and self-initiated learning, as well as having teacher directed and adult lead activities during the week.

In KS1, each class organises a daily lesson of 60 minutes. Daily lessons foster a balance of fluency practise, reasoning as well as using and applying/problem solving.

In KS2, each class organises a daily lesson of 60 minutes. Daily lessons foster a balance of fluency practise, reasoning as well as using and applying/problem solving.

Lesson delivery and outcomes are monitored by the mathematics leader and SLT.

Lesson plans set out daily objectives that progress towards the 'Expected' outcomes for their year group.

Children with SEND or in Vulnerable Groups are taught within the daily mathematics lesson and are encouraged to take part and are specifically differentiated for when the need arises.

Where applicable, children's IEPs incorporate suitable objectives to bring learning forward and teachers keep these objectives in mind when planning work.

Teaching Assistants are designated to support in certain sets and work with groups or individual children. They work collaboratively with the class teacher, liaising closely on a day to day basis to insure everyone is kept informed.

Where children are finding areas of mathematics particularly challenging, interventions are used to give the opportunity for practise and support in addition to the daily lesson. Across the school, in KS1 and KS2, when necessary these take place in the form of a 'Booster/intervention Sessions' where support is given directly in response to the previous day's learning where misconceptions arise or further practise is needed.

