

WYMONDHAM COLLEGE PREP SCHOOL



An Introduction to Maths at the Prep

Mathematics is important in everyday life. It is integral to all aspects of life and with this in mind we endeavour to ensure that children develop a healthy and enthusiastic attitude towards mathematics that will stay with them for life.

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. At the Prep we aim to foster moments of satisfaction and wonder when a child solves a problem for the first time, discovers a more precise solution to that problem, or suddenly sees hidden connections.

Throughout their time at the school, children will develop a range of strategies for solving mental, written and other mathematical challenges. Children will have access to problem solving activities to enable children to work on mathematical challenges, investigations and real life problems, including learning about specific strategies. Through this, the children develop persistence and perseverance to overcome difficulties in mathematics.

Aims of Mathematics at the Prep

- to stimulate curiosity, interest in and enjoyment of Mathematics
- encourage breadth of experience in the development of mathematical skills without in any way prejudicing thorough grounding
- encourage the development of investigative thinking and the application of mathematical knowledge to unfamiliar problems.
- to enable pupils to acquire a sound foundation of knowledge and understanding for future studies and facilitate the smooth transfer between the Prep and the College.
- to ensure that pupils extend their understanding of the number system and place value to include larger integers
- to develop the connections which pupils make between multiplication and division with fractions, decimals, percentages and ratio
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- to develop pupils' ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation
- to introduce pupils to the language of algebra as a means for solving a variety of problems

- to consolidate and extend knowledge developed in number in geometry and measure; to ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them
- to ensure that pupils are fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages
- to ensure that pupils read, spell and pronounce mathematical vocabulary correctly

Working mathematically

Through the mathematics content, pupils should be taught to:

Develop fluency

- consolidate their numerical and mathematical capability from key stage 2 and extend their understanding of the number system and place value to include decimals, fractions, powers and roots
- select and use appropriate calculation strategies to solve increasingly complex problems
- use algebra to generalise the structure of arithmetic, including formulating mathematical relationships
- substitute values in expressions, rearrange and simplify expressions, and solve equations
- move freely between different numerical, algebraic, graphical and diagrammatic representations [for example, equivalent fractions, fractions and decimals, and equations and graphs]
- develop algebraic and graphical fluency, including understanding linear and simple quadratic functions
- use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics

Reason mathematically

- extend their understanding of the number system; make connections between number relationships, and their algebraic and graphical representations
- extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically
- identify variables and express relations between variables algebraically and graphically
- make and test conjectures about patterns and relationships; look for proofs or counter-examples
- begin to reason deductively in geometry, number and algebra, including using geometrical constructions
- interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning
- explore what can and cannot be inferred in statistical and probabilistic settings, and begin to express their arguments formally

Solve problems

- develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems
- develop their use of formal mathematical knowledge to interpret and solve problems, including financial mathematics
- begin to model situations mathematically and express the results using a range of formal mathematical representations
- select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems