

## The Dingle Primary School Maths Subject Summary

Mathematics is a creative and highly inter-connected 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. At The Dingle, we believe that 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 Dingle Primary School mathematics curriculum 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.

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. At The Dingle, pupils are taught to make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They are also taught to apply their mathematical knowledge to science and other subjects. In order to succeed in mathematics, pupils at The Dingle are taught declarative knowledge, procedural knowledge and conditional knowledge which progresses through from EYFS to the end of Key Stage 2 and enables pupils to be efficient, highly-skilled mathematicians.

In the Early Years Foundation Stage, children develop a strong grounding in number which is essential in order to develop the necessary building blocks to excel mathematically. Children learn to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. They learn to recall number bonds up to 5 and understand the 'one more and one less' relationship between consecutive numbers. Children in reception are also encouraged to continue to develop mathematical vocabulary to describe position and the space around them (e.g. first and last, morning, afternoon) which is applied to stories, rhymes and daily routines. As well as a strong focus on number development, children in reception begin to develop spatial reasoning skills and identify and manipulate patterns and shapes in their learning environment with the use of pattern and building sets, jigsaws and construction kits. Children begin to develop measurement skills and knowledge through exploration in the learning environment and they are taught to compare length, weight and capacity using phrases such as 'heavier than' and 'smaller than' which provides them with firm foundations of mathematical understanding to build on in Key Stage One.

Pupils in Key Stage 1 build on the strong foundations of mathematics taught in EYFS. They follow the Power Maths scheme. The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This involves working with numerals, words and the four operations, including with practical resources. At this stage, pupils develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching involves using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money. By the end of year 2, pupils know the number bonds to 20 and are precise in using and understanding place value. There is an emphasis on practice at this early stage which aids fluency. Pupils learn to read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This ensures that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. At this stage, pupils develop their ability to solve a range of problems, including with simple fractions and decimal place value. Pupils are also taught to draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. Children use measuring instruments with accuracy and make connections between measure and number. By the end of year 4, pupils have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work. Pupils are also taught to read and spell mathematical vocabulary correctly and confidently, using their growing reading knowledge and their knowledge of spelling.

The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers up to 10 million. Pupils are also taught to make strong connections between multiplication and division with fractions, decimals, percentages and ratio. At this stage, pupils develop their 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. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures consolidates and extends knowledge developed in number. Teaching in Years 5 and 6 also ensures that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them. By the end of year 6, pupils are fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages. They can also read, spell and pronounce mathematical vocabulary correctly.

*“We will always have STEM with us. Some things will drop out of the public eye and will go away, but there will always be science, engineering, and technology. And there will always, always be mathematics.”* **Katherine Johnson**

*“Mathematics is, in its way, the poetry of logical ideas.”* – **Albert Einstein**



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