

Mathematics at Thorndown

At Thorndown, we are passionate about maths. We firmly believe that, with the right teaching, support and a growth mindset attitude, all pupils can enjoy and achieve in maths.

We value Mathematics as a creative and highly inter-connected discipline, which is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. We believe that a high-quality mathematics education provides a foundation for understanding the world, the ability to reason mathematically, and a sense of enjoyment and curiosity about the subject.

Aims

Staff at Thorndown work very hard to provide a stimulating maths curriculum, which enthuses our pupils and engenders a love of maths. All lessons provide opportunities for our pupils to develop their abilities in line with the aims of the **National Curriculum**, which are 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 have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems
- **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.

At Thorndown:

- Maths lessons are taught in mixed ability classes, adopting a **growth mindset** approach, so that no limits are set on pupils' learning, either by staff or the pupils themselves.
- We aim for our pupils to develop **deep conceptual understanding** and we use a **mastery approach**. We focus on topics, such as place value or addition, for a longer period of time and aim to deepen learning, rather than accelerate teaching. Pupils are taught to make connections and apply their learning in a wide range of contexts.
- **Differentiation** is carefully planned, but not through the use of different activities/content. Differentiation at Thorndown involves:
 - Use of **practical equipment**, which allows pupils to build mental models on which to hang their understanding of a concept.
 - Effective **questioning, scaffolding** and **ongoing formative assessment**.
 - Effective use of **adult support** to address misconceptions and support children who are struggling to grasp a concept, as well as deepening the understanding of pupils who have grasped concepts quickly. We expect that *all* pupils should achieve well in maths.

- **Intervention** is provided for individuals and small groups to address difficulties and misconceptions. This may take a variety of forms:
 - Immediate intervention (same or next day). Teachers and teaching assistants quickly respond to misconceptions which have arisen to ensure that the child is ready for the next lesson and does not get left behind.
 - Pre-teaching, which we find to be very effective in helping to prepare children for a unit of work, enabling them to better access the class teaching.
 - Short-term intervention tailored to meet an identified need or gap in understanding.
 - Published, research-based programmes, such as FirstClass@Number, which run for a longer period of time.

- **Practical equipment** is readily accessible in every class, including KS2, and its use by all pupils is encouraged. A range of **models and images** are used within teaching and are displayed in the classroom to support learning.
'Build it, say it, draw it, write it' is encouraged to help children develop deep conceptual understanding.
- **Mistakes** are celebrated. Our learning climate is such that pupils feel safe to 'have a go' and demonstrate a positive attitude towards challenge and struggle. We talk explicitly about making errors and share with pupils the latest brain science in order that they understand that they need to think deeply and the way brain connections are made. **It's good to be stuck!**
- Children should be aware of their **maths learning across the curriculum** and opportunities for them to apply their maths skills are planned into other subjects each week. We also use our 'Maths Eyes' to pose and answer mathematical questions about a picture from real life.
- **Calculation methods** are grounded in mental strategies and reinforced by reasoning.