

Mathematics

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Curriculum Rationale

Our vision in the Mathematics faculty at Dean Trust Ardwick is to offer a world class curriculum which offers pupils the opportunity to excel in Mathematics through a thorough and well thought out curriculum design that is based on the deconstruction of challenging GCSE style questions. Our goal is to provide pupils with the best teaching methods that will encourage them to become accurate, efficient and flexible problem solvers. At the centre of our curriculum are authentic problem-solving opportunities that present a significant cognitive challenge. Pupils must have the chance to struggle with meaningful problems, discuss possible solutions with their peers, create mathematical arguments, and place these arguments before a group of their peers who can provide validation and feedback. The faculty offers a broad and balanced curriculum to all pupils in all year groups and with every level of need.

In mathematics there are six main strands that underpin the threshold concepts:

- Number
- Algebra
- Ratio, proportion and rates of change
- Geometry and measure
- Probability
- Statistics

The mathematics curriculum at Dean Trust Ardwick interweaves these six strands throughout each year, ensuring that pupils master the threshold concepts and are able to:

- Develop fluent knowledge skills and understand of mathematical methods and concepts.
- Acquire, select and apply mathematical techniques to solve problems.
- Reason mathematically, make deductions and inferences and draw conclusions.
- Comprehend, interpret and communicate mathematical information in a variety of forms appropriate to the information and context.

Curriculum Overview

- Before arriving at Dean Trust Ardwick, KS2 pupils are taught some of the basics across all the aforementioned six strands of mathematics. In year 7 time is spent introducing pupils to 'the why' behind how certain methods of calculating are effective in order to provide pupils with a deeper understanding of the basics and enabling them to master these skills completely before moving onto applying these skills in problem solving contexts.
- Across KS3 and KS4 pupils are taught in a way that allows them to be exposed to all strands of the curriculum in each half term, ensuring pupils have a deep understanding as to how these topics interweave. Pupils therefore are better equipped not only to answer a question in an examination, but also to apply the skills they learn in the

classroom to real life situations.

- Encompassed in the curriculum are skills lessons, these lessons take place on a weekly basis, with a half termly focus on a bespoke set of skills. These skills are revisited every week to ensure that pupils are able to recall the key skills they need in order to advance through to challenging, interweaved, GCSE style questions.
- One of the most effective tools used in the mathematics curriculum to ensure key knowledge is revisited is the use of low stakes quizzes and testing. In mathematics, pupils across each key stage carry out retrieval practice at the start of each lesson. At the end of a sequence of learning, pupils are expected to draw upon knowledge and understanding from more than the current module of learning, to clarify and communicate their understanding to an abstract and interconnected scenario. Lastly, the faculty's homework policy has been designed to optimise low stakes quizzing and provide purposeful opportunities to practice their knowledge and understanding.
- KS3 pupils will clarify and communicate their knowledge and understanding at the end of each module in a task designed to provide the opportunity for pupils to demonstrate their learning. This is alongside cumulative assessments in the autumn, spring and summer. Furthermore, pupils in KS4 will clarify and communicate their knowledge in the format of GCSE examination style questions throughout modules and in cumulative assessments in the autumn, spring and summer of KS4.
- At the beginning of Year 10, pupils are set based on their ability, and begin to follow a 'Foundation' or 'Higher' scheme of work. Whilst this is not necessarily indicative of the pupils' tier of entry, it provides pupils with the opportunity to hone the skills best suited to allowing them to achieve their best at GCSE. Final decisions on tiering take place in the first term of year 11, ensuring that pupils have optimum time to address the misconceptions, cement the key knowledge and have a deep understanding of the structure of their cumulative examinations.