

# Curriculum Vision

<b>Faculty</b>	Mathematics	<b>Subject</b>	Mathematics
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## Our Vision

### Faculty Vision

At John Willmott, the Mathematics department want to provide learners with a learning environment that promotes curiosity, reflection, independence, adaptability, fluency, and critical thinking. We hope that by carefully sequencing our lessons to build on prior learning and clear modelling we can demystify the stigmas attached to Mathematics and provide learners with a sense of achievement and enjoyment. Our curriculum is designed to be sufficiently challenging for students so that they have to think mathematically. We aim to ensure all our learners are not only fluent in basic procedural skills but are also well equipped to reason and problem solve; so that they can all become valuable members of society.

## Curriculum Sequencing Rationale and Implementation

### KS3

Our curriculum is coherently planned and sequenced. We follow the White Rose Maths Scheme of Learning to ensure that our students see consistency as they transition to Secondary School, as a large proportion of our feeder primary schools also use White Rose Maths. We have mapped White Rose Maths against the National curriculum to ensure our curriculum is broad and balanced and sufficiently challenging.

Our curriculum is broken down into small steps to manage the cognitive load of our students and enable them to transfer small chunks of learning into their long-term memory. Lessons are sequenced so that they build on prior knowledge of what students already know.

Students need to have secure foundations for us to build new topics on, and we make sure that retrieval is used regularly in lessons. A key part of the lesson for retrieval is the Do it nows, where students are required to recall prior knowledge that is a pre-requisite for the upcoming lesson. Further retrieval is built in through the use of interweaved concepts. For example, algebra studied at the start of year 7 will be linked to subsequent topics through the rest of the year 7 curriculum.

We use direct instruction to model key concepts to students. We have implemented evidence from cognitive load theory research to make this as effective as possible. This includes having split screen worked examples, only showing the 'we do' after the 'I do' and narrating our thought process as we model.

We ensure our representation is interweaved, using the same representations for a variety of topics across the years, this supports the students as they transition into KS4 where we continue to use the same representations, this helps students develop a conceptual understanding and not just a procedural one.

Through White Rose Maths we are developing a focus on Maths Mastery and this is already interweaved through the resources with the representations used; with this being a focus we have joined an NCETM Mathshub Mastery workgroup.

### KS4

Throughout KS4 we ensure we are consistent in our style of teaching like we are with KS3, interweaving topics throughout the scheme of learning, ensuring regular retrieval is happening in our Do It Nows to help students build on previous steps and again using direct instruction.

In KS4 the students prepare for the AQA syllabus, this is something that in year 10 is prepared for using White Rose Maths, which is coherently planned, feeding on from the key skills developed in KS3, we continue to use the same representations from the KS3 curriculum and continue to break the content down into ensuring that student develop confidence to practice new skills and further develop schema. Concepts are often interweaved and this is coherently planned and sequenced for all.

In Year 11 the students follow a bespoke plan, as we transition from a previous SOW to White Rose, students cover content identified by their classroom teacher through a QLA following an assessment at the end of Year 10 that needed to be reviewed.

To support the students in their preparation they are given past papers in lessons every other week to ensure they are seeing content they have learned in an exam style situation. Along with the rest of KS3 and 4 they have a mixed retrieval DIN.

### **KS5**

At KS5, students study the Edexcel curriculum involving sections on Pure Maths, Statistics and Mechanics. Students will use prior knowledge from the higher GCSE syllabus to build upon their mathematical abilities, and they will be encouraged to explore concepts and how to derive them, thus strengthening their critical thinking and problem-solving skills.

There is a strong emphasis on algebra and how students can develop thoughtful ways of representing, simplifying and rearranging equations to ensure they can transfer these skills when meeting new concepts in Mechanics and Statistics. We also ensure students can understand and identify relevant information that they can use to form algebraic expressions and draw accurate diagrams to show data or motion of particles.

Students are given responsibility of their own learning through independent study. Coupled with a positive learning environment in which questioning prompts their own discovery of concepts, we develop resilient learners who approach problems with determination. Students are prepared for their chosen educational pathways and careers by exposing them to links to real-life purpose of Maths. Their problem-solving skills are consistently developed through regular exam practice and exploring real-life data, scenarios and challenging activities.