Curriculum Vision in Mathematics

Our Key Stage 3 curriculum:

- provides **three tailored curriculum pathways** that ensure support and challenge for all, regardless of prior attainment or background
- is carefully **planned and sequenced** to allow for progression within topics and across strands of mathematics
- supports students in developing their **procedural fluency** through frequent recall of facts, formulae and key rules
- explicitly focuses on the development of students' **reasoning skills** through regular verbal rehearsal and in writing involving questions that require thinking about the 'how' and 'why'
- provides regular opportunities for students to develop their **problem solving skills** through exposure to multi-topic questions and unfamiliar problems which require them to draw on knowledge from their long-term memory
- includes **early exposure to algebra** by transitioning from working with numbers to generalising and working with variables and unknowns
- promotes relentless insistence on use of **correct language** and **subject specific vocabulary**, resulting in students 'speaking like mathematicians'
- promotes teachers to proactively present **common misconceptions** and **errors**, generating discussions around why these are not mathematically correct
- includes explicit use of the **concrete-pictorial-abstract** approach to ensure a real depth and conceptual level of understanding, fading scaffolds and models as students move from novice to expert learners
- encourages teachers to use **consistent methods** and **approaches** to topics and concepts to support students' transitions between classes, year groups and teachers
- includes **regular formative assessment** in the form of knowledge checks, reasoning and problem solving skill checks, low stake multiple choice quizzes and mini whiteboards to check for understanding
- embeds **retrieval practice** to ensure learning sticks, through lesson starters, homework tasks and interleaving of topics as students work through the curriculum
- fosters a **love of maths** and an **appreciation of how mathematics** underpins virtually all the practical developments in science, IT and economics which have formed our modern world.

Our Key Stage 4 curriculum:

- provides **three tailored curriculum pathways** that ensure support and challenge for all, regardless of prior attainment or background
- is carefully **planned and sequenced** to allow for progression within topics and across strands of mathematics
- supports students in developing their **procedural fluency** through frequent recall of facts, formulae and key rules
- explicitly focuses on the development of students' **reasoning skills** through regular verbal rehearsal and in writing involving questions that require thinking about the 'how' and 'why'
- provides regular opportunities for students to develop their **problem solving skills** through exposure to multi-topic questions and unfamiliar problems which require them to draw on knowledge from their long-term memory
- includes regular **exposure to GCSE-style exam questions**, **mark schemes** and **examiner comments** to familiarise students with how they will be assessed at end of Year 11
- promotes relentless insistence on use of **correct language** and **subject specific vocabulary**, resulting in students 'speaking like mathematicians'
- promotes teachers to proactively present **common misconceptions** and **errors**, generating discussions around why these are not mathematically correct
- includes explicit use of the **concrete-pictorial-abstract** approach to ensure a real depth and conceptual level of understanding, fading scaffolds and models as students move from novice to expert learners
- encourages teachers to use **consistent methods** and **approaches** to topics and concepts to support students' transitions between classes, year groups and teachers
- includes **regular formative assessment** in the form of knowledge checks, reasoning and problem solving skill checks, low stake multiple choice quizzes and mini whiteboards to check for understanding
- embeds **retrieval practice** to ensure learning sticks, through lesson starters, homework tasks and interleaving of topics as students work through the curriculum
- fosters a **love of maths** and an **appreciation of how mathematics** underpins virtually all the practical developments in science, IT and economics which have formed our modern world.

Our Key Stage 5 curriculum:

- Strengthens their mathematical understanding to build well-rounded, ambitious, and resilient mathematicians

- Fosters a **love of maths** and an **appreciation of how mathematics** underpins virtually all the practical developments in science, IT and economics which have formed our modern world.

- Builds on number and **algebra skills** in pure maths and, through **solving problems**, developing resilient, creative, and strategic thinkers.

- Encourages the **writing of structured solutions**, proof and justification of results help to formulate reasoned arguments.

- Studies the **applications of mathematics in Mechanics and Statistics**, using mathematical modelling to make sense of real-life problems, and then refining the model and identifying its limitations.

- **Uses technology** where appropriate; for example, the use of graphing tools, spreadsheets, and advanced calculators to support statistical analysis.