

Curriculum Intent

Our long-term aim is to produce an ambitious, connected curriculum accessible to all our students from Year 7 through to Year 11. The curriculum not only covers all the content of the National Curriculum and GCSE, but also provide pedagogic advice for teachers. We want students to become fluent in the fundamentals of mathematics, to be able to reason and to solve problems. Our curriculum embraces these National Curriculum aims, and provides guidance to help students to become:

Visualisers – we use the Concrete/Pictorial/Abstract (CPA) approach to help students understand mathematics and to make connections between different representations.

Describers – we place great emphasis on mathematical language and questioning so students can discuss the mathematics they are doing, and so support them to take ideas further.

Experimenters – as well as being fluent mathematicians, we want students to love and learn more about mathematics.

Sequencing Rationale

The fundamental idea behind our curriculum design is to support students to be able to perform simpler tasks so they can then move on to perform tasks that are more complex. For example, we cannot expect students to add two numbers together before they understand what each individual number represents.

We have tried to combine the best of both ‘mastery’ and ‘spiral’ approaches in our curriculum. It follows many of the mastery principles – spending longer on topics to help gain deeper understanding, making connections, keeping the class working together on the same topic and a fundamental belief that, through effort, all students are capable of understanding, doing and improving at mathematics. However, we also know that just spending a chunk of time on a topic doesn’t mean that all students will ‘master’ it the first time they see it. Students need to see a topic repeatedly in different contexts and in different years to help them truly develop their understanding on their journey to mastery, so we have built in the revisiting and reinforcing features of spiral curricula too.

This thinking gives rise to a typical sequence of ‘blocks’ of mathematics that you will see in all of our year groups. Within each of these blocks we then have ‘small steps’ which are again sequenced in order of difficulty and dependency. As an example here are the first few steps of our Year 8 Fractions and Percentages block:

- Convert fluently between key fractions, decimals and percentages R
- Calculate key fractions, decimals and percentages of an amount without a calculator R
- Calculate fractions, decimals and percentages of an amount using calculator methods R
- Convert between decimals and percentages greater than 100%
- Percentage decrease with a multiplier
- Calculate percentage increase and decrease using a multiplier
- Express one number as a fraction or a percentage of another without a calculator
- Express one number as a fraction or a percentage of another using calculator methods

Each lesson can involve a mixture of small steps, not necessarily in the order they are seen above. If applicable a lesson would start with “review steps” - this is material that will have been

covered in KS2 or Year 7. Teachers are encouraged to use their knowledge of their classes to decide how long to spend on this content before moving on to the KS3 material, again building up slowly and ensuring that students can become fluent with both calculator and non-calculator methods.

Fluency (substantive knowledge – the facts), reasoning and problem solving (disciplinary knowledge – the application) are included in all our small steps. We certainly don't advocate that all the fluency in a block is done first, then the reasoning and then the problem solving. We believe these should be integrated into classroom practice as much as possible in the order that is appropriate for the step, e.g. the process of division may be introduced by a problem about sharing or grouping for which we need to become fluent at the procedure.

Our curriculum is designed to use skills that have already been learnt in different contexts (sometimes called 'interleaving') whenever we can. This helps students to remember and to make connections between different parts of the curriculum. In Year 8, fractions and percentages will feature in:

- Standard index form
- Area of trapezia and circles
- The data handling cycle

before being built on and extend in Year 9 and beyond.

We try to include this revisiting in our example questions, and in the worksheets resources that we have for every small step. We also use Flashback 4 – a daily starter activity consisting of one question each from a topic covered last lesson, last week, two or three weeks ago and last term or last year.