MATHEMATICS

Intent – What do we learn and why?

These schemes of learning (SOL) have been carefully designed both to maximise progression and to allow flexibility. In Years 7 and 8 all pupils follow the same SOL irrespective of prior achievement as we understand that pupils may flourish at different ages. Some content will inevitably be met in our higher prior achieving sets earlier than in others. This means that for those not yet attaining as highly as their peers, there will be more time for consolidating and revisiting concepts before rushing on to new content. In Years 7 and 8 we teach a Mastery curriculum and the principles of Teaching for Mastery are a key feature of the department. Mastery is achieved through developing procedural fluency and conceptual understanding in tandem. Lessons are designed collaboratively to have a high level of teacher-pupil and pupil-pupil interaction. We aim for all pupils to be thinking about, working on and discussing the same mathematical content. Challenge and the opportunity to deepen understanding through solving problems linking key mathematical ideas is provided for all. This deep understanding is then built upon with the further content required in Years 9 to 11.

Implementation – How is the curriculum planned?

The content covered and the sequence of this content for all year groups has been carefully designed so that topics can build on previous content learnt. For example, Year 7 starts with developing algebraic thinking and then further development of algebraic skills is then woven throughout the year so students reinforce and extend their knowledge and understanding. The new GCSE places great emphasis on problem solving, because of this we teach certain pivotal topics needed for problem solving early in each year so that these topics can then be combined with later topics. For example, solving equations is taught early and revisited each year as this can be combined with almost every topic to create problem solving questions. We hold great value in revisiting and overlearning previous content. Our Schemes of learning allow plenty of opportunity for students to overlearn and use skills learnt earlier in the year when solving problems involving many different areas of mathematics. Our overarching theme is to combine topics, wherever possible, to cope with the high demands of the new GCSE.

We recognise that practice is a vital part of learning and we aim for the practice to be intelligent practice that develops pupils' conceptual understanding and encourage reasoning and mathematical thinking, as well as reinforcing their procedural fluency. We use well-crafted examples and exercises which, through careful use of variation focuses pupils' attention on the key learning point. Significant time is spent developing a deep understanding of the key ideas and concepts needed to underpin future learning. The structures and connections within the mathematics are emphasised, which helps to ensure the pupil's learning is sustainable over the five years. We believe that making mistakes in maths is one of the best ways to learn and gain a strong understanding. We will encourage pupils to 'have a go' at everything, building their resilience and confidence in lessons.

Every attempt is made to keep the whole class learning together. Differentiation is achieved through paying attention to the levels of questioning and the support and challenge needed to allow every pupil to fully grasp the methods and concepts being learnt. This ensures all pupils gain a deep and secure understanding of the mathematics being learnt which can then be built on with subsequent content in the learning sequence. Acceleration by some pupils through new content is avoided. Instead, these pupils are challenged by deeper analysis of the methods and concepts and are challenged by applying this content in new and unfamiliar problem-solving situations. If some pupils fail to grasp an

important aspect of the method or concept this will be identified quickly either by teacher monitoring or by an end of topic diagnostic task. Early intervention in these cases will ensure that these pupils will catch up.

To encourage independent learning, home learning and home work will be split into two distinct types of task. These tasks will be set every other week, a home learning task one week and a home work task the next. Home learning: These will be set to all students and will be linked to the SOL. The tasks will be to watch three lesson clips from www.corbettmaths.com to remind them of the topics and methods learnt earlier in the term. We will run 3 weeks behind the SOL so that these tasks act as a revision for topics just learnt or help with any overlearning. The watching of these clips will be accompanied by a written task relevant to the content covered. There is a regular homework support session after school on Wednesday for those pupils who require extra support and guidance.

UPDATE

Changes have been made to our maths curriculum maps due to school closures and Covid. Our philosophy hasn't changed and our rationale remains the same. We have, however, updated our Schemes of learning to ensure all pupils have access to full coverage of the GCSE specification and to ensure all pupils have the opportunity to gain a full understanding of all topics and methods needed and learnt:

- Year 9: This is a bespoke one-year scheme that covers all the basics needed to succeed at GCSE at either tier of entry. It covers the topics questioned the most at GCSE and the topics which underpin the others needed for GCSE. The approach in Year 9 is a more exploratory approach with pupils exploring how the maths and methods work before formalising them and building on them in future years.
- Year 10 and 11: These two years will cover all topics that are needed for GCSE. This means a little more overlearning in places to guarantee that all gaps in learning missed from any school closure or gaps in understanding arising from remote learning can be filled.

In case of full/partial lock-down we will follow the curriculum outlined using a bespoke package of resources including our own loom videos, video lessons from Oak National Academy and video lessons from the White Rose Hub. This way we will be able to personalise any remote learning to pupils based on their need.

Assessment – How do we assess student understanding in Mathematics?

Assessments run throughout the year to check understanding and each one of these will be followed with a DIRT task to either consolidate or for overlearning. The end of year assessments will cumulatively assess all topics covered. Pupils will complete a diagnostic task after each topic to check understanding and these are also accompanied with a DIRT task and an opportunity for further challenge with problem-solving.

Home Learning

Extra-curricular activities are embedded within our departmental culture, we aim to engage pupils in exploring topics across the curriculum and to take them to new levels of thinking. We participate in The UKMT maths challenges and team events and hold selection trials leading up to these where all pupils can get involved.
From Year 9 the schemes are split into two tiers and these are:

- The Foundation Tier – by the end of Year 11, the foundation tier will cover all the content in the Foundation GCSE, allowing students to attain a grade 5.
- The Higher Tier – all of the Higher-level GCSE content is covered, allowing access for students all the way to grade 9.

There is a large overlap between the two tiers covering all the grade 3 to 5 content and the structure has been planned so that any student who changes tier can do so easily.