

Curriculum Intention statement:

It is our mission to enable all learners to enjoy and succeed in mathematics. We want learners to think about maths beyond what is tested in national examinations and to be equipped with an understanding of mathematics that will be relevant and useful in their future studies and/or in the world of work.

Provide learners with a deep conceptual understanding of mathematical principles, the ability to confidently communicate in precise mathematical language, while becoming mathematical thinker

KS4 Intention	KS5 Intention
<p>Year 9 is a foundation year organised into mastery half terms. It closely aligns with the National curriculum and the DFE/NCTEM Guidelines from KS3</p> <p>In year 10 and 11 we offer 3 qualifications at GCSE</p> <ul style="list-style-type: none"> • Pearson Edexcel Level 1/Level 2 GCSE (9-1) in Mathematics (1MA1) • Pearson Edexcel Level 1/Level 2 GCSE (9 - 1) in Statistics (1ST0) • AQA Certificate Level 2 Further Mathematics <p>Changed over from AQA during COVID as we wanted more robust grading material. We felt the support in assessing our students was better. With access to results plus, this allows us to run a QLA regularly and adapt teaching plans accordingly.</p> <p>We reviewed this decision at the beginning of the year as a trust and the same conclusion was made Trustwide.</p> <p>We kept AQA certificate for Further Maths as the questions asked provide higher attainers with more challenging problem solving questions that lead nicely into the concepts taught at both A level and A level further mathematics</p>	<p>We offer 3 qualifications at KS5</p> <ul style="list-style-type: none"> • AQA Certificate Level 3 Mathematical Studies • Pearson Edexcel Level 3 Advanced GCE in Mathematics (9MA0) • Pearson Edexcel Level 3 Advanced GCE in Further Mathematics (9FM0) <p>In order to create a smooth transition from key stage 4 to a level we swapped over to Edexcel so that students could follow on from higher GCSE to A Level smoothly. We Chose Level 3 Core maths from AQA as the syllabus aligned well with our specialties with critical path analysis being used in both engineering and computing.</p> <p>We also offer the ability to study for additional problem-solving courses such as MAT and STEP these have been support by in school tutors and by ASMP.</p>
<p>KS4 Core curriculum knowledge covered</p>	<p>Exam (Ks5) curriculum knowledge covered</p>

<p>All aspects of the KS 4 PoS are covered in terms of number algebra, ratio, proportion, rates of change, geometry and measures, probability and statistics.</p> <p>A curriculum map is organised into mastery half terms. Extended time is spent within a single area of mathematics. This allows teachers to spend more time developing learners' conceptual understanding. It also provides opportunities to go into greater depth within a concept area and make connections with other areas of mathematics.</p> <p>The curriculum is organised to be cumulative. This means that mathematical concepts that are taught earlier in the curriculum are revisited in the context of a new area of mathematics.</p> <p>This helps learners to make connections between different mathematical concepts. Retrieving, using and applying concepts regularly, transferring to new contexts helps develop fluency as well as conceptual understanding.</p> <p>Year 11 is at an adaptive phase post mocks, review previously learn content and filling the gaps before moving on.</p>	<p>In level 3 mathematical studies we cover: analysis of data, maths for personal finance estimation and critical analysis of give data and model. We then study optional content on critical path and risk expectation cost benefit analysis. The curriculum is sequences to begin with Handling data to facilitate learning in other subjects then moves on to critical analysis and personal finance prior to the end of the year to support students in the next steps. This is a spiralling curriculum that is built upon in year 2</p> <p>At A level the main key topics covered are Proof, algebra and functions, coordinate geometry, sequences and series, trigonometry, exponentials and logarithms, differentiation, integration, numerical methods and vectors. Whilst in further mathematics focuses on proof, complex number matrices, further algebra, calculus, vectors, polar coordinates hyperbolic functions differential equations. We also take the optional content of further mechanics 1 and decision 1 to support two of our specialities engineering and cyber.</p> <p>A specific example (not exhaustive) A level maths and Further maths are carefully sequencing so that pupils who are studying further maths concurrently cover the prerequisite material in plenty of time for their units. For example in year 1 differentiations and integration are frontloaded to support further mathematician in their work with further calculus</p>
---	---

Mutually beneficial curriculum connections	Mutually beneficial curriculum connections
---	---

<p>Lots of overlap between Maths, Science, Engineering subjects; we met together to push forward the teaching of algebra in mathematics to support formula work and graph work in science & engineering. Geometry skills particularly support the construction aspects of Manufacturing & Product Design</p> <p>We also serve the WVMi curriculum through financial planning, budgeting and other enterprise related aspects.</p>	<p>A heavy overlap with physics in the mechanic sections of A level. This is taught early on in physics and later on in mathematics to invoke a retrieval practise effect. There is a heavy overlap with maths for engineering which is sequenced differently to A level where content is first taught in mathematics and then retrieved in maths for engineering.</p> <p>We are working with the Health lead to consider the statistical aspects required to support this course when it starts in 2023 at A level</p>
---	---

How and where specifically this subject's curriculum contributes to the 'wider' development of learners?			
---	--	--	--

Subject Specific Skills	Wider Learning Skills	Personal Attributes support learning	Preparation for Adult Life
PConceptual Understanding	Mathematical Thinking	In order for learners to make sense of a new idea or relationship learners need to	The simple answer to this is that maths is a part of our everyday life and is relevant to

<p>We use the content of the national curriculum as the starting point for our curriculum but this is expanded upon by making explicit the foundational knowledge that learners need to understand in order to access this.</p> <p>Tasks are sequenced to help learners build a narrative through different topics. These topics are then sequenced in a logical progression that allows learners to establish connections and draw comparisons.</p> <p>Multiple representations are carefully selected so that they are extendable within and between different areas of mathematics. Using these rich models encourages learners to develop different perspectives on a concept.</p>	<p>By the time they reach school, all pupils have demonstrated a significant range of innate ways of thinking that can be harnessed in the classroom to develop mathematical thinking. 17 feeder schools however means this is far from consistent across all learners.</p> <p>We must support pupils to develop mathematical ‘habits of mind’ – to be systematic, generalise and seek out patterns.</p> <p>The creation of a conjecturing environment and considered use of questions and prompts are important elements of encouraging learners to think like mathematicians.</p> <p>Our curriculum is designed to give learners the opportunities to think mathematically.</p> <p>Throughout the curriculum you will see tasks that require learners to specialise and generalise, to work systematically, to generate their own examples, to classify and to make conjectures.</p> <p>This is aided by our prompts for thinking which help make these important parts of mathematics more explicit.</p>	<p>incorporate it into their current understanding and see how it connects with ideas and relationships they have encountered previously.</p> <p>The greater their understanding of what has been taught previously, the more sense making they will be able to do in the future with increasingly complex mathematics. Therefore, we believe that the key to knowing more mathematics lies in understanding</p> <p>We also believe that learners who make sense of the mathematics they are learning have more memorable and enjoyable experiences that are more likely to be remembered in the long term. They will also be able to do more as they understand how to push the boundaries of what they know and apply it to solve problems.</p>	<p>any job we end up doing, even if it is not visibly apparent.</p> <p>Maths has many benefits that we may not realise. If you go into the depth of its possible use, maths can help further develop areas of the brain. Additionally, it also:</p> <ul style="list-style-type: none"> • Improves our reasoning and analytical skills • Helps us become more practical • Can be applied daily • Keeps our minds sharp <p>The process through which we solve a maths problem is by:</p> <ul style="list-style-type: none"> • Collecting the data • Breaking it down • Observing the relations between different parts to resolve the issue logically <p>Therefore, when you can end up with logical solutions through maths, it will help prepare you for real-life problems.</p>
Cultural Capital	Disciplinary Literacy	British Values	Promotes the Equality Objectives
<p>UKMT team and individual participation</p> <p>Participation in AMSP Event and training</p> <p>Participation in maths month</p> <p>Encourage wider reading in the subject</p>	<p>Mathematical language strengthens conceptual understanding by enabling pupils to explain and reason. This must be carefully introduced and reinforced through frequent discussion to ensure it is meaningfully understood.</p> <p>The more learners use mathematical words the more they feel themselves to be mathematicians.</p>	<p>We have high expectations of behaviour which fully support the themes of respect and tolerance. Subject content does not directly lead itself to the other themes but may be touch upon on occasion.</p>	<p>Our curriculum provides two very similar curriculum maps (F and H) that all learners are expected to follow. This means that all learners have the same access to the curriculum content and there is no ceiling imposed on what learners can achieve, we recognise that not all learners come to each lesson at the same starting point. For</p>

<p>Links with curriculum content to the world of work, financing and functional engineering</p>	<p>Talk is an essential element of every lesson and time is dedicated to developing confidence with specific vocabulary as well as verbal reasoning</p> <p>The content of our curriculum carefully progresses in order to induct learners into the mathematical community. A large part of this community is confident use of the language, signs and symbols of mathematics. Verbal and non-verbal communication is part of every sequence of learning in the curriculum.</p> <p>This often starts with more informal language initially, building up to formal and precise mathematical language</p> <p>Talk tasks are part of every lesson in the curriculum to help with this development</p>		<p>this reason, we provide additional resources designed to help learners access the main curriculum and also provide planning resources designed to help teachers adapt lessons to provide scaffolding and depth according to the needs of their learners</p> <p>We have regular assessment and analysis to ensure students have movement where needed to ensure the best possible delivery in every class. The use of scaffolding and modelling techniques allows all students to access all levels of the curriculum and experience success.</p>
---	---	--	---

Implementing the curriculum:

- Each course has a long-term plan with detailed units that a shared with staff and reviewed annually and we are currently in the position of redrafting our long terms plans into parent speak long term plans to make them more explicit and accessible to parents and other stakeholders
- State how the delivery will be resourced. Within schemes of work there are recommended resources from key places such as variation theory and Dr frost maths. We also subscribe to active learn for access to digital textbooks and resources maths box and integral logins are also provided. We heavily use Dr frost maths and have just begun the centralisation of our resources so that workload can be minimised, and teachers have a starting point at which to adapt for their class.
- Pupils generally have a work folder. In this folder there are key notes that may takes the form of a key fact book or printed notes, a workings book for pupils to practise there key skills in a section of any loose sheets and a section of assessments.
- All worked is place on google classroom or Dr frost/up learn maths for the students to access remotely.
- Evidence of linking back to key stage 3 and forward two key stage 5 is built into the schemes of work.
- We have more maths Monday, transition Tuesday and further maths Thursday
- We participate in the maths challenge and pupils are given the option to work on the skills in the run up to the challenge both in lesson and at sessions at lunch time.

Measuring the impact of the curriculum:

- I know our curriculum in not only robust but ambitious as our results are on and upwards tend with a progress 8 of 0 and a redborne progress measure of over 0.5.Fundamentally we have zero NEETs

- At sixth form pupils achieved mainly in line with expectations with some students achieving both A/A*'s in maths and further mathematics
- The number of students the retain maths at sixth form is high almost all (18) students take maths in some form. Further maths has been consistently opted for each year.
- We have 2 students in year 13 that have just undertaken MAT as they are apply to do maths at both Oxford and Cambridge.
- QA is carried out each cycle and monitored through standards tracker. Learning walks are carried out to ensure consistency of delivery and Work scrutinise are carried out to monitor curriculum coverage an content as well as assessment and feedback.
- Our assessments are an important part of that ensuring progress is being made and content has been understood. End of block assessments provide a quick progress check at the end of each block of learning to make sure students have understood the content covered. Low stakes end of unit tests and formative DIN (Do it Now) tasks are used to track progress and inform recall. For each "Data drop" cumulative tests are used to give accurate reflection of student progress towards target. Work in in place to use QLA is used in KS4 exams to track progress and inform recall. Memory recall activities have begun to check on a more formative level.
- All students participate in green pen "ROLL/Student response to feedback" after each assessment and examination. This helps to build skills, retain knowledge and highlight which areas need further attention as well as provide the students with a task to develop their learning. QLA is used in KS4 exams to track progress and inform recall for staff. Data collection cycles enable full cross-year overviews – staff meet with DOS to discuss outcome of Data drops at whole group and individual level.
- As well as in class interventions our weakest pupils are also give support for the numeracy skills and to address any gaps in there learning through complete maths tutor. As well as this there is More maths Monday, Transition Tuesday and further maths Thursday, attendance to these clubs is registered and added to the pupils bromcom profile.