BROUGHTON
HIGH SCHOOL

MATHEMATICS CURRICULUM STATEMENT

Intent

The school's vision and educational aims for Mathematics are to provide a rigorous academic curriculum that is ambitious, challenging, enriching and inclusive. This is in line with the school's aims to encourage high aspirations in order to maximise progress and enable all pupils to experience success. Our aims for Mathematics reflect the aims of the National Curriculum whilst also striving to prepare pupils to be numerically competent in their later life. We also endeavour to foster a love of Mathematics and problem solving which leads pupils to continue the study of the subject upon leaving the school.

The knowledge and skills that pupils develop in their mathematics lessons make a valuable contribution to other areas of the school curriculum. Subjects such as Science, Geography and Engineering benefit from having pupils who are fluent in a wide range of mathematics.

The curriculum is reviewed constantly and in a collaborative fashion. We have a clear plan for what pupils should know and be able to do at the end of both KS3 and KS4. This is very clearly detailed in all schemes of work.

Content is sequenced so that new knowledge builds on prior knowledge. This is particularly pivotal in Year 7 where our curriculum builds on what has been taught at Primary School.

As well as carefully sequenced content we attempt to change attitudes and stereotypical views of Mathematics. In society we often here "I was never any good at Maths" or "I'm not a Maths person". This has become a somewhat accepted phrase but if you replaced the word Maths with 'reading' or 'writing' a different picture starts to emerge and this is why this phrase must be challenged. Mathematics is the bedrock of any civilised society and all pupils must move away from holding this attitude if they are to truly appreciate the subject.

Implementation

In Years 7, 8 & 9 pupils are taught for 3 hours a week in groups that are put together based broadly upon a pupil's ability. Within each year group pupils study material which builds upon previously taught concepts at a pace and depth that is best suited to the pupil. The material is carefully sequenced so that topics build upon each other in a spiral fashion.

In Year 10 pupils are taught for 4 hours a week and in Year 11 3 hours. Pupils are grouped by prior attainment. Approximately two thirds of the cohort are entered for the Higher tier with the remaining third sitting the Foundation Tier. The decision on tier of entry is not made until Year 11 with some groups following a 'Crossover' approach which aims to cover the material which sits across both exam tiers. Movements between groups are made as required and there is no set period in which teachers can move pupils. This allows for movements to be made as needed so that pupils are in the appropriate group as soon as possible

Almost all pupils are taught by a subject specialist. Sharing good practice is naturally embedded within the department with time also dedicated within departmental meetings for this. The subject leader regularly attends meetings of other subject leaders to discuss current good practice which is then fed back to colleagues in departmental meetings.

Mathematics is a highly hierarchical discipline and our curriculum choices reflect this. Learning is coherently sequenced so that new concepts are built on top of existing ones. Units of work are all sequenced in this fashion so that pupils can build confidently on what they already know. Before starting a unit of work,

teachers check pupil's prior understanding so that any gaps in knowledge can be addressed before continuing.

Teachers in the department make excellent use of mini-whiteboards to check for understanding when decided whether to progress a concept or revisit certain aspects of it. Questioning is a key tool used throughout the department to inform next steps in lessons. This adaptive approach is embedded into the fabric of the department. Teachers use a variety of techniques to check for understanding to ensure that pace and content are appropriate.

The department is aware of research into Cognitive Load Theory and its implication in the classroom. Topics are broken down into small steps to ensure that the cognitive load placed on pupils working memory is not overloaded. Similarly, when using worked examples teachers are aware that listening, watching and copying down notes simultaneously is again placing too much strain on working memory and so strategies are utilised to minimise this load. Pupils with SEND benefit from their teachers awareness of the above and have full access to the National Curriculum.

Teaching for understanding is a priority within the department. Teachers put equal emphasis on both the 'why' and the 'how' when covering new concepts. Retrieval practice is a regular feature in lessons and gives pupils the opportunity to transfer concepts into long term memory.

Pupils complete homework on the Sparx Maths platform which uses AI to respond to the prior attainment of the pupils and alter the difficulty level accordingly. Homework is made up of 60% of content that the teacher decides and 40% of consolidation of prior topics.

Lesson observations show that all teachers make explicit reference to new subject specific vocabulary and insist on pupils using new vocabulary in an accurate way during in class discussion. From observations it is also clear that teachers consistently use tier 2 vocabulary during their lessons. This contributes to the wider whole school focus on literacy.

Assessment in KS3 is undertaken using unit tests following the completion of a topic. Key here is that tests are delayed so that results measure how much content has been transferred to long term memory rather than recent experience giving a false picture of a pupil's understanding. Pupils are expected to correct mistakes made on these tests following live modelling from the teacher. Teachers can then use the results of these assessments to identify any pupils who need further help with a topic.

Unit tests are again used in KS4 but only in Year 10. Formal mock exams are undertaken in Year 11 to allow teachers to get a true picture of where pupils are as they approach the GCSE exam.

Feedback plays a crucial role in the development of pupils at Broughton. All pupils receive regular feedback on how they can improve. This is particularly evident in Year 11 where pupils complete a past GCSE paper every fortnight which is marked by the teacher with a lesson then used immediately afterwards for pupils to receive verbal feedback on where they made mistakes or could have used a more efficient method.

Impact

Performance in Maths at Broughton exceeds all expectations with both attainment and progress measures significantly above the national average. In 2022/23 the percentage of pupils achieving a Grade 7+ was 35.9% compared to a National figure of 21.1%. The average points score of the 2023 cohort was 5.8 which is a full grade higher than the national average of 4.6.

Without Maths qualifications there are less opportunities available to young people. Over 86% of pupils left Broughton in 2023 with a standard pass in their GCSE enabling them to access the next phase in their education without the need to re-sit Maths.

High uptake at A-Level gives some indication that teachers do a good job of fostering an enjoyment and curiosity of mathematics. A key factor in pupil's enjoyment of the subject is that they are taught almost exclusively by a subject specialist.

Regular work scrutiny shows that pupils have covered the intended curriculum. This scrutiny shows that pupils make accurate use of mathematical terminology and notation. It is also clear that much thought and effort go into the communication of mathematics with detailed and methodical work plain to see. We are mindful that this does not show that they have learnt the intended curriculum which is why we delay testing for a period after a topic is taught. There is clear evidence in books that feedback is having an impact with all pupils responding to feedback using a purple pen. The department makes good use of whole class feedback to ensure that workload is minimised for teachers where possible.

Using Sparx Maths gives pupils live feedback on the questions they have attempted with a second chance available. This allows pupils to develop self-checking strategies and affords them the opportunity to develop self-regulation.