

The mathematics curriculum at Five Acres High School

To improve at mathematics, students need to know more and remember more about each of the following areas: number; algebra; ratio, proportion and rates of change; geometry & measures; statistics & probability, and use this to think mathematically when problem solving.

Intent

Why should all pupils learn this subject?

Mathematics has evolved over many centuries to help solve problems. Mathematics teaches us to think logically; to identify and state the problem clearly; to plan how to solve the problem; and then to apply the appropriate methods to evaluate and solve the problem.

Mathematics is more than a subject that everyone in school needs to take. Many believe that mathematics is only needed in the Science, Technology Engineering and Mathematics fields (STEM). That's true, mathematics is absolutely essential in those fields, but it is also needed in many other fields including economics, many of the social sciences such as psychology and sociology, and in many of the arts and humanities disciplines including art, music, and mass communications. Mathematics has been called "the universal language".

What is the core knowledge in this subject?

The core knowledge needed in mathematics can be broken down into five key strands - number, ratio and proportion, algebra, geometry and measure, and probability and statistics. As well as mastering the fundamental content in mathematics, students need to develop core mathematical skills such as reasoning mathematically and problem solving.

Implementation

How is this subject taught at FAHS?

Our maths curriculum is ambitious in all areas for our students. Both the curriculum and lessons are knowledge and vocabulary rich so that students build on what they already know to develop powerful knowledge.

Knowledge is sequenced and mapped coherently so that students make meaningful connections and deepen their subject knowledge. Lessons are broken down into small connected steps that gradually unfold the concept, providing access for all students and leading to a generalisation of the concept and the ability to apply the concept to a range of contexts.

Fluency enables students to quickly and efficiently recall facts and procedures and have the flexibility to move between different contexts and representations of mathematics.

Variation is twofold. It is firstly about how the teacher explains and models the concept being taught, often in more than one way (preferred method), to draw attention to critical aspects, and to develop deep and holistic understanding. It is also about the sequencing of the episodes, activities and exercises used within a lesson and follow up practice, paying attention to what is kept the same and

what changes, to connect the mathematics and draw attention to mathematical relationships and structure.

Rigorous application of the science of learning and best practices ensures learning is informed by research.

We prioritise creating a diverse curriculum by committing to diversity in teaching and teachers, and the language, texts and media we use, to celebrate the diversity so all students feel positively represented.

Students are taught the same content regardless of set. The speed of what is taught does vary. Students are given a low stakes quiz every lesson based on previous work, the teacher will teach a new skill, the student will then practise this skill then review. This process can happen several times a lesson.

What are the key ways students practise in this subject?

- deliberate practice questions
- problem solving questions
- pair discussions
- spotting and discussing mistakes in given answers

Impact

What does assessment look like in this subject?

When joining us in Year 7 all students complete a Numeracy Age Test in order for the mathematics department to ensure each student is in the correct class and receiving support and challenge. Teachers continually assess pupils' understanding during lessons and throughout the academic year. Each lesson begins with a low stake quiz, designed to review, retrieve and revisit key knowledge from previous lessons and topics. These quizzes provide formative opportunities to address misconceptions and further assess pupils' learning over a period of time. In keeping with formative assessment, the mathematics department uses mini whiteboards in the majority of lessons to gauge student understanding, highlight misconceptions and help aid the retrieval of information. At the end of each topic students will sit an end of topic low stake assessment. This helps the mathematics teachers to review the current learning and decide upon any key areas that need to be readdressed. Each term a summative assessment is carried out, covering all material learnt in the academic year, and a QLA generated for each pupil. This helps teachers to compare progress over time, highlighting unique strengths and areas of improvement for each pupil. Alongside this, our homework platform Sparx generates 'Insights' on a weekly basis identifying any topics that the class have faced difficulties with. These allow us to address any areas of concern and carry out Try It Now tasks.