



King's Leadership Academy Bolton

Mathematics Curriculum Rationale

We will always have STEM with us. Some things will drop out of the public eye and go away, but there will always be science, engineering, and technology. And there will always, always be mathematics. — Katherine Johnson, mathematician.

Overview

In Mathematics students study topics within the following areas: Number, Algebra, Geometry, Statistics and Ratio and Proportion. The teachers within our Maths department have a passion for our subject and endeavour to share this passion for learning and problem solving in all of our lessons. Throughout each year at King's Leadership Academy Bolton students will deepen their knowledge and fluency within these areas, with a high focus on developing numerical fluency and problem solving skills. We aspire to ensure that all students leave school prepared for the world ahead of them, armed with skills to ensure that they can continue along their flightpath and achieve their ambitions. Number skills are required in almost all everyday situations, such as working out bills, calculating your salary, shopping, dealing with mortgages and investments. Thinking like a mathematician helps our students to improve their problem-solving and decision-making skills.

Vocabulary Rich

At King's Bolton each Maths lesson has focus on a subject specific word, designed to increase pupils' understanding of the mathematical topic or process being studied and simultaneously support their literacy skills. This is done through a 'Key Word' of the lesson which also appears in the focus of the lesson hypothesis. Terminology is embedded through subject specialist teaching, using and applying vocabulary repeatedly throughout teaching and learning which supports students who need further opportunities for recall.

Academic skills/Independent Learners

It is often said that the only way to master Mathematics is to do Mathematics. At King's Bolton students are taught via the Direct Instruction methodology whereby the teacher will model new learning, check for understanding from students using a variety of questioning techniques and then ensure that students have the opportunity within lessons to practice new skills and master methods independently. This structure allows students who need adaptations to achieve a range of scaffolds but to also slowly develop their problem solving skills towards full independence.

Learners will make mistakes, and in Maths we learn from mistakes and we discuss common misconceptions as a class. Learners use their oracy skills to explain methods to the class and in Maths we ensure to explain 'the why' behind our mathematical processes to deepen understanding. Students are provided with revision lists, links to revision questions, explanatory videos and quizzes prior to assessments to encourage independent preparation and academic achievement.

Intellectual Habits

The curriculum allows and plans for teachers to review a series of work every fifth lesson. Students will then receive whole class feedback dedicated to this series of work. An entire hour is then dedicated to improving students' knowledge, fluency or problem solving in relation to that topic. This is achieved through re-teaching, reviewing and personalised tasks prepared by the class teacher. Each



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lesson begins with a Do Now of around 10 questions that focus on prior knowledge, ensuring regular recall and reducing long-term cognitive load for our mathematicians. Furthermore, King's Bolton has invested in HegartyMaths and Times Tables Rockstars. Homework each week follows the same routine: a previous topic (to support memory and recall) is allocated on Hegarty Maths, students then watch the video and write down the examples as shown in the video. They then complete a quiz online and in their books based on the topic. This routine becomes a habit, and HegartyMaths is a fantastic resource to prepare students for their learning cycle assessments and as a revision tool for GCSE examinations. Each week our students are invited to take part in our weekly House Competition to 'beat a teacher' at Times Table Rockstars, which is both enjoyable and promotes numeracy skills. As such, in the Maths department, through our Do Nows, our homework and our numeracy competitions, revision and recall become intellectual habits.

Inclusive

All students regardless of background or prior attainment will have the same access to a stretching and challenging curriculum and study to GCSE level. Taking a no glass ceilings approach, teaching and learning is adapted for SEND students at all ability levels appropriately with an opportunity for students to receive more bespoke teaching towards their tiered exam from year 9 onwards. Numeracy support is in place for students requiring additional support and high attaining students are stretched and challenged in our REACH tasks that form part of our independent practice, REACH lessons and Gap week. .