

The Mathematics Curriculum at Our Lady's Catholic High School

The study of Mathematics underpins a vast number of other subjects. The knowledge and skills acquired are transferable to many professions such as scientists, psychologists, geologists and economists. Logical thinking, problem solving, reasoning and appreciation of pattern and relationship are just some of the qualities developed in Mathematics and sought after by employers.

Pupils leave KS2 having followed the national curriculum with a good understanding of formal calculation methods and resilience when faced with problems, therefore we aim to deliver a curriculum that builds on this through:

- teaching for understanding
- developing confidence
- fostering interest in the subject
- equipping our young people with numeracy skills for life

Our team of specialists expertly ascertain pupils' prior knowledge and plan well-structured lessons to develop these aims. Teaching is reflective and good practice is shared within the department through regular discussion, a focus on current pedagogical approaches and links with the Maths Hub.

The National Curriculum determines our programme of study, providing each student with a broad, balanced, relevant and differentiated Mathematics curriculum. It is sequenced to support continuity and progression through the Key Stages and is designed to allow time to be carefully balanced between retention, challenge and application based on the needs of all pupils.

Our curriculum is ambitious for all pupils, including disadvantaged, EAL and SEND pupils, and is delivered in a way that allows all pupils, no matter their needs, to access the content and make excellent progress. Teachers of Mathematics use a variety of scaffolding techniques as well as concrete resources to allow all pupils in the class the support needed to achieve the expected outcomes. Teachers are acutely aware of the needs of their pupils and design lessons to ensure that starting points are established and knowledge is built up with whatever support is needed for their pupils.

The use of vocabulary in mathematics is developed mainly through modelling. Staff use the correct mathematical language and notation and encourage pupils to do the same during their answers, explanations and class discussions. Students are presented with opportunities to reason mathematically and justify their ideas thus allowing practise of their mathematical vocabulary.

We deliver a carefully designed three-year programme of study at KS3, adapted to ensure that progression through topics is made and links to other topics can be seen.

Our Year 7 and 8 pupils follow the White Rose Maths Scheme of Learning, made up of the following strands:

Year 7

- Algebraic Thinking
- Place Value and Proportion
- Application of Number
- Directed Number
- Fractional Thinking
- Lines and Angles
- Reasoning with Number

Year 8

- Proportional Reasoning
- Representations
- Algebraic Techniques
- Developing Number
- Developing Geometry
- Reasoning with Data

Our Year 9 curriculum is made up of three pathways containing the following strands:

- Patterns and sequences
- Algebraic proficiency and manipulation
- Solving equations
- Mathematical movement (Graphs)

- Numbers and the number system
- Calculating/Counting and comparing
- Checking, approximating and estimating
- Exploring fractions, decimals and percentages
- Calculating with fractions, decimals and percentages
- Proportional reasoning
- Visualising and constructing
- Investigating properties of shapes
- Measuring space
- Investigating angles
- Calculating space
- Presenting data
- Measuring data
- Probability

We deliver a two-year KS4 programme of study following the AQA specifications, ensuring that the beauty of Mathematics is still at the heart of teaching and that pupils are prepared for the rigour of the GCSE examinations.

Our KS4 content is structured under the broad headings below:

- Number
- Algebra
- Ratio, Proportion and Rates of Change
- Geometry and Measures
- Probability
- Statistics

Content is sequenced to ensure that prior knowledge is built upon and links between topics can be seen and made. In line with the National Curriculum, there are three key areas addressed throughout the programme:

- Fluency of both written and mental mathematics is developed with the complexity of questions changing over time. Emphasis is placed on recalling facts and retaining methods.
- Mathematical Reasoning is developed through both in-class discussions, with an emphasis on correct mathematical language used, and through questions involving proof or explanations, all of which are appropriate to the expectations of the pupils for each class and year group.
- Problem solving is developed through a variety of methods, including scaffolded questions, varying depths of questions but maintaining the same surface as well as open ended problems. These are included in both classwork and homework tasks and are also modelled to pupils to allow them to build up their own skill set.

We offer many extra curricular activities, including:

- Revision classes: Offered by staff for all Year 11 pupils
- Chess Club: A weekly opportunity for all students
- Primary Challenge: a yearly event where primary schools of the surrounding area are invited to send a team to compete in a problem solving day
- UKMT Challenge: Higher attainers participate in the National Challenges with opportunities to gain awards and progress to further rounds
- Maths Roadshow: All pupils in KS3 have access to 80+ activities allowing them to develop their reasoning and problem solving skills in a non-competitive environment
- World Maths Day: Every 2 years, KS3 pupils compete with other students around the world in Mathematical challenges
- Maths Feast – A team of four Year 10 pupils take part in this challenge day run by AMSP
- Well-good project – Year 7 pupils answer mathematical questions to win points which are converted into money to build wells in the developing world

Both formative and summative assessments are used within the Mathematics department to evidence pupil learning, allow staff to gain a deeper understanding of what each pupil can do as well as to inform future planning and teaching.

Formative assessment – staff use a variety of techniques to continually assess the understanding of the class and make appropriate live or subsequent adjustments to ensure key concepts are understood and remembered.

Summative assessment – the curriculum area assesses the same key content in the same way for each year group, allowing for reliability and validity in the assessment process. All assessments are teacher marked to further allow staff to identify areas of strength or weakness of pupils and inform future planning.

Our subject knowledge and pedagogy are developed through a variety of internal and external provisions. We have a Secondary Mastery Specialist, training with Maths Hub and NCETM, within the department and a lot of our development time within the department is based around understanding and incorporating Teaching for Mastery within our practice.

Several staff have attended external training sessions that they felt would be interesting to them as well as beneficial to their own teaching practice and that of the department for example, work by Craig Barton on interleaving, variation theory. These all support the ideas that underpin teaching for mastery, which is our focus

We also use our development time sessions to discuss whole school developments as well as participate in collaborative planning using NCETM resources for input. Staff find it useful to have opportunities for sharing practice and feeding back on how trialling new ideas went for them, so these have been incorporated into the allotted time for the department to develop.

Members of the department are actively engaged in the work of Abacus NW Maths Hub where we can share our practice both within and outside of the department as well as learn from external colleagues.