MATHEMATICS CURRICULUM MAP
2024 – 2025

Wembley Multi-Academy Trust — ACHIEVEMENT FOR ALL

NORTH BRENT SCHOOL

Intent:

Mathematics is essential to everyday life; from science and technology through to the financial literacy required in most forms of employment. Throughout all lessons, skills are broken down into key steps and we ensure that students master each step before moving on to the next. We then build these skills together towards the end of a topic to ensure students are able to make links between the skills they have studied and are able to apply them to more complex problem. This approach ensures that all students succeed and make rapid progress.

By following the national curriculum programme of study we ensure that our students study a breadth of mathematical concepts based around the key strands of number, algebra, ratio and proportion, geometry and measure and probability and statistics. Each strand is broken down into key topics which are then separated into a sequence of learning objectives which each class moves through at the correct pace for the students. During KS3 our students study all of these topics each year, in ever-increasing depth and complexity in order to develop fluency in the fundamentals of mathematics. Repetition and practice help to promote recall and application of knowledge which will be required in order to access more sophisticated problems in KS4.

By ensuring the fundamentals are embedded during KS3 we create a solid platform on which to build in KS4, with a focus on application of content to complex problems. For those that have not yet mastered the fundamentals there is a continued emphasis on repetition of key concepts. However, for the more able students, the SOW is designed so that key concepts are recapped quickly before spending more time exposing students to applied questions to develop depth of understanding and problem-solving techniques. From the SOW, teachers are able to choose the starting point for each unit depending on the needs and the ability of the class. This means that each year students revisit a topic, they start further along the progression through that topic. Class sizes get smaller as you move through the sets to provide the support that is needed for students to reach their target grades. In homework there is an emphasis on AO2/3 style questions to develop fluency and exam technique.

Implementation:

Year	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
7	A good understanding of number and algebra underpins all processes in mathematics. As such, our focus this half term is about building on the number and algebra skills learnt in primary school to develop fluency and ensure solid foundations are in place. **Content:** • Calculations & negative numbers • Powers, roots & BIRDMAS • Collecting like terms.	Pupils continue to develop their number skills, whilst applying them to new contexts such as fractions and percentages. We also start to apply number skills to the essential concepts of ratio and proportion which are essential for developing mathematical reasoning skills. We end this half term by starting to look at some real world applications of mathematics through	We revisit and further develop our algebra skills as we study more complex areas of algebra such as quadratic and simultaneous equations. We also deepen our understanding of number and start to make links between previous topics such as decimals and numerical index laws as we study standard form. We end this term by applying our algebra skills to graphs, looking at plotting coordinates	We finish off our work on graphs, by studying straight line graphs in depth. After this, the focus for the remainder of the half term is geometry. All of the number and algebra skills which have been studied so far this year, can now start to be applied to topics such as perimeter, area and volume. We also start to introduce problem-solving skills when looking at complex geometric problems at the end of each topic.	The focus of this half term, is applying the number skills developed so far to real-life contexts through the topics of compound measures, data and statistics. Pupils develop an understanding of how statistics and graphs can be used in the real-world to analyse and represent data. At the end of this half-term, we re-visit geometry, this time specifically looking at right-angled triangles and the topics of Pythagoras' Theorem and trigonometry.	We start to make links between geometry and graphs through the study of transformations. We also revisit graphs through the topic of distance and velocity-time graphs, making links with the compound measures content that was studied last half term. This allows pupils to develop a deeper understanding of these topics, as well as studying them at a more complex level.

	- Algebraic index laws - Expanding brackets & factorising - Substitution - Solving linear equations - Decimals - Units of measure - Rounding and estimation - Numerical index laws	the study of probability. **Content:** - Factors, multiples and primes - Fractions - Percentages - Converting between fractions, decimals and percentages - Ratio - Proportion - Probability	and different types of graphs. **Content:** - Quadratic equations - Inequalities - Sequences - Simultaneous equations - Standard form - Coordinates & plotting graphs - Quadratic, cubic & reciprocal graphs	**Content:** - Straight line graphs - Perimeter - Area - Circles - Surface area & volume - Angles & polygons	**Content:** - Compound measures (speed, density, pressure) - Data collection & sampling - Averages - Frequency tables - Charts - Pie charts - Pythagoras - Trigonometry (SOHCAHTOA)	**Content:** - Transformations. - Similarity & congruence - Plans & elevations - Constructions & loci - Bearings - Real-life graphs - Distance/velocity-time graphs - Vectors
8	We revisit the number and algebra topics from Year 7, whilst aiming to recap the basic skills that were learnt and build fluency, before studying each topic to a greater depth, thus improving understanding and providing the opportunity to tackle more challenging concepts such as algebraic fractions. **Content:** - Calculations & negative numbers. - Powers, roots & BIRDMAS (extension to surds). - Collecting like terms. - Algebraic index laws. - Expanding brackets & factorising (extension to expanding triple brackets and algebraic	We revisit the essential number skills of fractions, percentages, ratio and proportion, whilst extending to more complex topics which also start to bring in algebra skills, such as algebraic proportion. Pupils will also start to look at more complex ideas within probability such as conditional probability. **Content:** - Factors, multiples and primes. - Fractions. - Percentages (extension to reverse & compound percentages). - Converting between fractions, decimals and percentages. - Ratio. - Proportion (extension to algebraic proportion).	We revisit the algebra topics such as inequalities and equations that were first met in Year 7. Pupils will recap the basic skills, before deepening their understanding by applying them to more challenging topics such as quadratic simultaneous equations. **Content:** - Quadratic equations. - Inequalities (extension to quadratic inequalities). - Sequences (extension to quadratic sequences). - Simultaneous equations (extension to quadratic simultaneous equations). - Standard form. - Coordinates & plotting graphs (extension to solving simultaneous equations graphically).	We revisit the geometry topics which were first met in Year 7. The emphasis is on building on the basic skills and formulae that were learnt, whilst bringing in more complex concepts such as algebra, and linking back to solving equations formed from geometric problems. **Content:** - Straight line graphs (extension to parallel and perpendicular lines). - Perimeter. - Area. - Circles (extension to arcs and sectors). - Surface area & volume (extension to compound solids and frustums). - Angles & polygons.	Pupils' data skills are honed further by revisiting topics first met in Year 7 and recapping them, before extending them to more complex situations such as histograms and cumulative frequency graphs. Similarly, the topics of Pythagoras' Theorem and Trigonometry are now extended to 3D scenarios and non-right-angled triangles. **Content:** - Compound measures (speed, density, pressure). - Data collection & sampling. - Averages. - Frequency tables. - Charts (extension to histograms cumulative frequency graphs). - Pie charts. - Pythagoras (extension to 3D).	We revisit the topics studied at the end of Year 7, but start to apply them to more complex situations, building on the 3D work that was introduced last half term for example by studying similarity in 3D objects. **Content:** - Transformations. - Similarity & congruence (extension to 3D objects). - Plans & elevations. - Constructions & loci. - Bearings (extension to include trigonometry). - Real-life graphs. - Distance/velocity-time graphs. - Vectors (extension to 2D problems).

	fractions). • Substitution. • Solving linear equations. • Decimals (extension to recurring decimals). • Units of measure. • Rounding and estimation. • Numerical index laws.	• Probability (extension to conditional probability & algebraic probability).			• Trigonometry (extension to3D, sine & cosine rules).	
9	We begin Year 9 with a focuson algebra to ensure that pupils are fluent with all algebra skills as these are essential for all other topics at KS4. We revisit the algebraskills from KS3, but new concepts, such as completing the square, are also introduced. At the end of thehalf term, we move on to looking at how the number skills honed in KS3 can be applied to ratio and proportion. **Content:** • Simplifying, expanding &factorising. • Algebraic fractions. • Solving equations. • Completing the square. • Solving inequalities. • Numerical index laws. • Ratio. • Proportion (numerical andalgebraic).	We go back to focussing on algebra, however the focus ison the application of algebraic skills to more complex contexts such as functions and rearranging formulae. In addition, pupils begin to explore the concept of proof, which is essential when studying maths to a higher level. **Content:** • Sequences. • Simultaneous equations. • Rearranging formulae. • Functions. • Iteration. • Algebraic proof.	We predominantly focus on geometry topics, building onthe foundations which were built in KS3, whilst also bringing in the algebra skills to help with topics such as the sine and cosine rules. Throughout this term we also develop problem-solving skills by attempting multi- step problems within each topic. **Content:** • Pythagoras & Trigonometry (SOHCAHTOA). • Trigonometry: sine & cosine rules. • Area & circles. • Surface area & volume. • Similar shapes. • Primes, factors, multiples & estimation.	We begin with deepening pupils' understanding of different representations of number, including standard form and surds. We also look at real-life applications of number such as compound measures (speed, density & pressure) and probability. Whilst studying probability, we also make links with algebra by using it to help solve complex probability problems. **Content:** • Standard form. • Surds. • Fractions, decimals & percentages. • Compound measures. • Probability.	We begin by revisiting number to look at the importance of bounds in problem solving. This also brings in links with other topics covered previously such as speed, distance, time.We then move on to building on the data and statistics topics which were covered in KS3, by revisiting averages, representing data and histograms in more depth. We end this term by revisiting geometry topics and deepening the understanding from KS3. **Content:** • Accuracy & bounds. • Averages. • Representing data. • Histograms. • Angles in parallel lines. • Angles in polygons. • Transformations.	We focus on applying numberand algebra skills to graphs through the study of straight line graphs and equations of circles. We also start linking back to geometry and revisit angle facts through circle theorems. We continue on the geometric theme, considering geometric proofthrough the study of vectorsand congruent triangles. **Content:** • Coordinate geometry. • Circle theorems. • Equation of a circle. • Graph transformations. • Vectors. • Congruent triangles. • Construction, loci & bearings.

Early entry GCSE	Pupils who are being entered for their GCSE early study the same topics in the same order but they move through the content more quickly to ensure there is plenty of time for revision beforethe exams in half term 5/6.					
10	Throughout Year 10 the same topics are studied as in Year 9, with an aim to recapping the more basic skills, before moving on to applying the concepts to more challenging contexts. By revisiting each topic, our students will form stronger links between topics, and become more confident in applying their skills to unfamiliar situations.					

	We revisit key number and algebra skills to ensure that strong foundations are in place so that these skills canstart to be applied in other topics throughout the year.
	
	Content:
	• Simplifying, expanding & factorising.
	• Algebraic fractions.
	• Solving equations.
	• Completing the square.
	• Solving inequalities.
	• Numerical index laws.
	• Ratio.
	• Proportion (numerical andalgebraic).
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						• Solving inequalities.
						• Numerical index laws.
						• Ratio.
						  Proportion (numerical andalgebraic).

GCSE Further Maths	Those students who have been entered early for their GCSE have the opportunity to study GCSE Further Maths in Year 10 or 11. This qualification provides an excellent introduction to some key A-level Maths and Further Maths topics and helps set students up to be successful at A-level. This provides more challenge for our high achieving students by assessing their higher order mathematical skills, particularly algebraic reasoning, in greater depth, thus preparing them fully to maximise their potential in further studies at Level 3. This content covered whilst studying for this qualification places an emphasis on higher order technical proficiency, rigorous argument and problem solving skills.					
	Students will revisit some algebra and number topics from GCSE to ensure that fluency has been acquired, but also extend them to new concepts, for example,	Students meet the topic of calculus; an essential A-level topic which builds on their understanding of algebra andits applications. In addition, students	In the remaining time before the exams at the end of the year, those students who are re-sitting their GCSE will now study a SOW targeted at achieving a grade 9 through the	During this half term, those students who are re-sitting their GCSE continue to followa SOW targeted at achieving a grade 9 through the study of challenging GCSE	In this half term, the focus continues to be on revision, to ensure that students are fully prepared for their exams. Students continue to complete weekly mocks which	Exams.

solving simultaneous equations with three unknowns. Students will also develop their understanding of functions, an important A- level topic, as they study domain and range. They will also extend topics such as coordinate geometry from GCSE and look at the equations of circles which are not centred on the origin.

Content:
- Product rule for counting.
- Surds.
- Algebraic fractions.
- The factor theorem.
- Binomial expansion.
- Sketching functions.
- Domain and range.
- Composite & inverse functions.
- Solving equations & inequalities.
- Simultaneous equations (3 unknowns).
- Algebraic proof.
- Sequences.
- Equations of straight lines & circles.

deepen their understanding of trigonometry and make links with solving equations as they are introduced to key concepts of trigonometric graphs and solving trigonometric equations.
They also further their understanding of transformations from GCSE as we look at how matrices can be used in transformations.

Content:
- Differentiation.
- Tangents & normals.
- Increasing & decreasing functions.
- Stationary points.
- Matrices.
- The identity matrix.
- Matrix transformations.
- Geometric proof.
- Pythagoras & trigonometry in 3D.
- Trigonometric graphs.
- Trigonometric identities.
- Solving trigonometric equations.
- Integration.

study of challenging GCSE topics. Those who have already achieved a grade 9 will continue to revise and develop their understanding of GCSE Further Maths concepts and practice their problem solving skills when applying the content to new scenarios. Students also complete weekly mocks which their teachers mark and give feedback on. Any areas which need more focus are then targeted through revision lessons to ensure that students become more confident and able to tackle exam-style questions.

GCSE resit content:
- Accuracy & bounds.
- Functions.
- Histograms.
- Probability.
- Vectors.
- Circle Theorems.
- Congruent proofs.

topics. Those who have already achieved a grade 9 will continue to revise and develop their understanding of GCSE Further Maths concepts and practice their problem solving skills when applying the content to new scenarios. Students continue to sit weekly mocks to ensure they become familiar with the style of questions in the exam and constantly receive feedback on their progress.

GCSE resit content:
- Venn diagrams.
- Graph transformations.
- Coordinate geometry.
- Regions.
- Velocity-time graphs.
- Constructions, loci and bearings.

their teachers mark and give feedback of areas of strength and areas which need more focus. These areas are then targeted through revision lessons to ensure that students become more confident and able to tackle exam-style questions.

| 11 | Throughout Year 11 the same topics are studied as in Year 10, but at a faster pace to ensure there is plenty of time for revision during half term 5 to prepare for the exams at the end of the year. There is a continued aim of ensuring that strong foundations are in place for each topic, before building on these with ever-increasing depth and a particular focus on application to unfamiliar contexts and developing problem-solving techniques. |

In the first half term of Year 11, we revisit key number and algebra skills to ensure that strong foundations are in place from which to develop problem solving skills and fluency in applying these concepts to other contexts. **Higher Content:** • Simplifying, expanding & factorising. • Algebraic fractions. • Solving equations. • Completing the square. • Solving inequalities. • Numerical index laws. • Ratio. • Proportion (numerical and algebraic). • Sequences. • Simultaneous equations. • Rearranging formulae. **Foundation Content:** • Calculations & negative numbers. • Powers, roots & BIRDMAS. • Collecting like terms. • Algebraic index laws. • Expanding brackets & factorising. • Substitution. • Solving linear	During this half term there is a strong focus on applying number and algebra skills to geometric scenarios in trigonometry, area and volume. Numerical and proportional reasoning skills are also applied to complex contexts in similar shapes. Students further develop their problem solving skills through the study of algebraic proof and percentages. **Higher Content:** • Functions. • Iteration. • Algebraic proof. • Pythagoras & Trigonometry (SOHCAHTOA). • Trigonometry: sine & cosine rules. • Area & circles. • Surface area & volume. • Similar shapes. • Primes, factors, multiples & estimation. • Standard form. • Surds. • Fractions, decimals & percentages.	In this half term we revisit probability and statistics to ensure that students are finely tuning their data interpretation and analysis skills. We also recap key geometric topics and further develop students' problem solving skills when working with real-life contexts when studying bounds. **Higher Content:** • Compound measures. • Probability. • Accuracy & bounds. • Averages. • Representing data. • Histograms. • Angles in parallel lines. • Angles in polygons. • Transformations. **Foundation Content:** • Area. • Circles. • Surface area & volume. • Angles & polygons. • Compound measures (speed, density, pressure). • Data collection & sampling. • Averages. • Frequency tables. • Charts. • Pie charts. Pythagoras.	During this half term we further hone students' application and problem solving skills through the study of complex coordinate geometry problems involving straight lines and circles. Students also further develop their proof and deduction skills through the study of vectors and congruent triangles. **Higher Content:** • Coordinate geometry. • Circle theorems. • Equation of a circle. • Graph transformations. • Vectors. • Congruent triangles. • Construction, loci & bearings. **Foundation Content:** • Trigonometry (SOHCAHTOA). • Transformations. • Similarity & congruence. • Plans & elevations. • Constructions & loci. • Bearings. • Real-life graphs. • Distance/velocity-time graphs. Vectors.	In this half term, the focus shifts to revision, to ensure that students are fully prepared for their GCSE exams. Students complete fortnightly mocks which their teachers mark and give feedback of areas of strength and areas which need more focus. These areas are then targeted through revision lessons to ensure that students become more confident and able to tackle exam-style questions.	Exams.

	equations. • Decimals. • Units of measure. • Rounding and estimation. • Numerical index laws. • Factors, multiples and primes. • Fractions. • Percentages. • Converting between fractions, decimals and percentages. • Ratio.	**Foundation Content:** • Proportion. • Probability. • Quadratic equations. • Inequalities. • Sequences. • Simultaneous equations. • Standard form. • Coordinates & plotting graphs. • Quadratic, cubic & reciprocal graphs. • Straight line graphs. Perimeter.				

Enrichment Opportunities:

Chess Club: Attending Chess Club helps pupils develop critical thinking, problem-solving, and strategic planning skills while enhancing concentration and patience in a fun and competitive environment.

Puzzle Pirates: Year 7 and 8 pupils have an opportunity to attend 'Puzzle Pirates' club each week. Attending Puzzle Pirates benefits pupils by developing their logic and problem-solving skills through challenging activities tackled both individually and in teams. This not only enhances their mathematical thinking but also prepares them for the Junior Maths Challenge in Year 9.

Additional qualifications: The school's most able mathematicians in are given opportunities to achieve the highest grades in GCSE early. This means that they then go on to study additional maths qualifications such as **Further Maths GCSE** and **Additional Maths FSMQ**. These qualifications provide pupils with the opportunity to study some A-level Maths and Further Maths content early, promoting pupils' interest in studying the subject to a higher level.

Impact:

Formative assessment is an integral part of our approach to Teaching and Learning. Over the course of their study, we will use weekly/fortnightly cumulative formative diagnostic assessments (in class or for homework) to ensure that students are consistently retrieving their knowledge of different components. The purpose of this is to ensure all knowledge is retained (and any gaps are identified and addressed promptly) and also to inform teachers' planning. Using this style of assessment, we will make use of the advantages of spaced practice as well as allowing pupils to be able to apply their knowledge to a wide variety of contexts.

Students will also sit a summative assessment every term. This assessment will be cumulative and will assess not only what the students have learned over the previous term, but also their understanding of all relevant material previously taught. Staff are supported to mark these accurately and post assessment moderation also takes place to ensure the validity of the data. All data is analysed centrally (not by teachers) and each Subject Leader is given a report outlining the areas of strength and weakness. This is used to inform future planning, support with additional interventions and set changes.