

Mathematics: Year 9 (foundation)

Intent:

At Brayton Academy, we recognise the importance of mathematics as a life skill in society and industry, as well as a beautiful and elegant subject in its own right.

We have carefully sequenced the foundational skills to be consistently developed throughout pupils' time at school, to provide students with the fluency they need to tackle problems confidently.

Our curriculum is grounded in using assessment to identify where students are and builds up knowledge securely to ensure no gaps are left. Our expectations are very high; we expect pupils to take pride in their work, to complete homework to a high standard, bring a positive attitude to the classroom and always strive to be their best. This goes hand-in-hand with helping students to develop a love of learning maths by supporting them to be successful at every step through expert teaching. We believe that all students have the potential to learn maths to a high level when we take this approach.

- Create an atmosphere where ALL students feel comfortable to give their all to learning maths without being scared of making mistakes
- Open ALL students' eyes to the real world transferable skills that maths equips them with and the opportunities that arise from this
- Encourage ALL students to further develop their resilience skills with a determined mind-set when approaching new material and problem-solving tasks
- Eliminate any fear of maths through meeting ALL students at their level and supporting them to be successful

Implementation:

In year 9 pupils begin studying either the higher or foundation GCSE course. Staff constantly assess whether pupils are in the appropriate band and there is still the opportunity to move between tiers throughout the year if appropriate.

The focus for the year 9 foundation programme of study is to identify and close gaps in pupils' knowledge that have prevented them from going on to study the higher material. This is done through careful use of assessment. In the majority of cases pupils simply need a little more time to master concepts, and the year 9 foundation curriculum is set up to give them this, whilst ensuring that we still move pupils' knowledge on wherever possible. The focus this year is on fluency with mathematical concepts. While pupils will be taught to apply these concepts wherever possible a focus on mathematical fluency will help to prevent any potential barriers to learning around literacy to prevent students' mathematical abilities from developing.

Throughout the year pupils will be set homework on the Hegarty Maths platform that will revise content they have already studied, rather than focusing on what they are currently looking at in class. This gives them another opportunity to ensure that previously studied material is retained.

The following table lists core skills only. These are the concepts all pupils are expected to master. Some students will go on to study related extension material.

Term		Year 9 (foundation)	
	Topic	Knowledge	Skills/Assessment
Term 1	Number	Apply rules of negative numbers to large numbers, multiply and divide by negative powers of 10, write a number as a product of its prime factors, use prime factors to find HCF and LCM	<p>All topics begin with an initial assessment, and prior knowledge gaps are filled in before moving on to new content.</p> <p>Pupils complete a revision quiz part-way through each half term to be marked by their teacher. This will allow gaps to be closed before the end of half-term assessment.</p> <p>At the end of each half-term there will be an assessment on all of the topics pupils have studied in that block.</p>
	Angles	Angles between parallel lines, the interior/exterior angle sum of any polygon	
	Algebra	More complex substitution involving indices, decimals and negatives, the expansion and simplification of expressions containing multiple single brackets, solve equations with unknowns on both sides.	
	Bearings	Solve bearings problems involving angle rules and Pythagoras	
	Fractions	Perform all 4 operations with fractions and mixed numbers, compare and order fractions, decimals and percentages by converting to a single form	
	Rounding and estimating	Apply estimation skills to complex situations, write down the error interval for a number that has been rounded or truncated	
	Decimals	All 4 operations with decimals, calculations that are a mix of fractions and decimals without a calculator	
Term 2	2D representations of 3D shapes	Combine knowledge of plans and elevations and scale drawings	<p>All topics begin with an initial assessment, and prior knowledge gaps are filled in before moving on to new content.</p> <p>Pupils complete a revision quiz part-way through each half term to be marked by their teacher. This will allow gaps to be closed before the end of half-term assessment.</p> <p>At the end of each half-term there will be an assessment on all of the topics pupils have studied in that block.</p>
	Coordinates and linear graphs	Plot linear and quadratic graphs, use graphs to solve simultaneous equations, understand the relationship between a line's gradient and y-intercept and its equation, understand midpoints and end points of line segments.	
	Sequences	Fibonacci sequences, nth term rules of linear and quadratic sequences, set up and solve equations to determine if a number is a member of a linear sequence	
	Area	Calculate the area of compound shapes, surface area of non-cylindrical prisms, use perimeter/ area to find missing lengths	
	Measures	Convert between units of measure, estimate real life measures, use the formulae for speed, density and pressure	
	Collecting and representing data	Pie charts, dual and compound bar charts, frequency polygons, stratified sampling	
Term 3	Percentages	Reverse percentage questions including increase and decrease problems	<p>All topics begin with an initial assessment, and prior knowledge gaps are filled in before moving on to new content.</p> <p>Pupils complete a revision quiz part-way through each half term to be marked by their teacher. This will allow gaps to be closed before the end of half-term assessment.</p> <p>At the end of each half-term there will be an assessment on all of the topics pupils have studied in that block.</p>
	Equations	Factorise expressions into a single bracket, expand double brackets, revision of all forms of solving equation covered so far, index laws	
	Transformations	Enlargements, reflection in diagonal lines, add and subtract column vectors, perform multi-step transformations	
	Pythagoras	Pythagoras in context such as multi-step problems and problems involving area	
	Probability	Relative frequency and experimental probability, tree diagrams, deduce "original" data from information about probabilities	
	Ratio	Questions that combine ratios, reverse ratio problems, combining ratios with fractions, decimals and percentages	