Mathematics: Year 7

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 7 pupils will build on the foundational mathematical skills that they studied at primary school. Our aim is to introduce students to new concepts gradually, allowing them to explore them fully, so that they have a secure knowledge base upon which to build in subsequent years. We use knowledge checks at the start of each new topic to ensure that we are not leaving gaps in the knowledge of any individual student, nor are we re-covering concepts pupils are already familiar with. This ensures that all of our classes are provided with the right level of challenge. We constantly build opportunities for revision into our lessons to give students the best possible chance of retaining the information they have been taught.

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 7		
	Topic	**Knowledge**	**Skills/Assessment**
Term 1	**Number**	Fluency with negative numbers, the order of operations, multiply and dive by powers of 10	All topics begin with an initial assessment, and prior knowledge gaps are filled in before moving on to new content. 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. At the end of each half-term there will be an assessment on all of the topics pupils have studied in that block.
	Averages	Calculation of the mean, median, mode and range. Use of these concepts to make comparisons.	
	Data	Bar charts, duel and composite bar charts, tally charts, pictograms, stem and leaf diagrams	
	Factors and multiples	Identify factors and multiples, find the highest common factor/ lowest common multiple of 2 or 3 numbers. Recognise prime numbers.	
	Algebra	Simple algebraic expressions and equations and their meaning. How to simplify and solve in simple contexts, perform simple rearrangements	
	Basic fractions 1	Writing and simplifying fractions, equivalent fractions, comparing and ordering fractions, mixed and improper fractions.	
Term 2	**Decimals**	Perform the 4 operations with decimals, understand their place value, order decimals	All topics begin with an initial assessment, and prior knowledge gaps are filled in before moving on to new content. 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. At the end of each half-term there will be an assessment on all of the topics pupils have studied in that block.
	Rounding	Round and truncate to decimal places and significant figures. Use rounding to estimate answers.	
	Properties of polygons	Know the names of polygons up to 12 sides. Identify lines of symmetry and orders of rotational symmetry.	
	Basic fractions 2	Find fractions of amounts and solve reverse problems. Add and subtract fractions together and multiply/ divide by whole numbers. Multiply fraction by each other	
	Perimeter	Calculating the perimeter of any straight-edged shape	
	Angles	The application of angle rules for straight lines, full turns, triangles, quadrilaterals and vertically opposite angles to increasingly complex situations	
	Indices	Raise any number to any positive integer power, understand square and cube root notation, indices in the context of order of operations, simplify expressions containing indices	
	Algebra	Substitution, solve 2-step equations and perform 2-step rearrangements, expand a single bracket	
	Area	Find the area of rectangles, triangles, parallelograms and trapeziums, work backwards with the area of rectangles, triangles and parallelograms	
Term 3	**Ratio and proportion**	Write and simplify ratios, share quantities in ratios and perform the process in reverse, use the unitary method to solve problems	All topics begin with an initial assessment, and prior knowledge gaps are filled in before moving on to new content. 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. At the end of each half-term there will be an assessment on all of the topics pupils have studied in that block.
	Percentages	Understand the equivalence of fractions, decimals and percentages, calculate percentages of amounts with and without a calculator	
	Probability	Write probabilities as fractions, decimals and percentages, list combinations of outcomes, estimate the number of times an event will occur given its probability	
	Coordinates	Plot coordinates, solve problems by finding missing coordinates, find the mid-point of a line segment	
	Linear graphs	Plot linear graphs using equations, read unknown values from graphs, recognise equations of horizontal and vertical lines	