


<b>Year: 7</b> <b>Subject: Maths</b>	<b>Curriculum Intent:</b> The curriculum seeks to develop on prior learning and therefore students will continue to build upon their knowledge and skills across all elements of the curriculum. Students will be given the opportunity to solve problems and develop their reasoning skills, which encourages them to be more fluent in their mathematical thinking. This will develop their resilience whilst also igniting their curiosity for using mathematics outside of the curriculum.		
<b>Number</b>	<b>Term 1</b> <b>Indices</b> All – Use positive integer indices to write repeated multiplication calculations. Most - Calculate positive integer powers. Some – Simplify algebraic products and quotients	<b>Term 2</b> <b>Rounding/Significant figures</b> All – Understand and use place value. Round to one decimal place and to nearest whole number/tens/hundreds/thousands. Most – Round to a given degree of accuracy decimal places or significant figures. Some – Estimate using rounding in complex calculations and contextual questions interpreting results.	<b>Term 3</b>
	<b>Standard Form</b> All – Multiply and divide by 10, 100 and 1000. Most – Convert numbers from standard form Some – interpret and order big numbers expressed in standard form. Convert numbers to and from standard form	<b>Roots and Surds</b> All – Recap positive integer powers and exact roots, for example 2 to the power 4 is 16 and the square root of 9 is 3. Recognise simple powers of 2, 3, 4 and 5. Most – Calculate with integer powers and exact roots. Some – Estimate powers and roots to the nearest whole number (e.g. $\sqrt{51} \approx 7$ ) and state what a root would be between.	
	<b>BIDMAS</b> All – Use add / subtract as inverse operations. Use written methods for calculations with integers, use the order of operations, including brackets. Understand negative numbers. Order positive and negative integers, decimals, and fractions. Understand & use place value in big numbers and decimals Most – Appreciate the infinite set of real and rational numbers. Represent inequalities on a number line using conventional notation of solid or open dots. Some – Confident with mental & written methods for calculations with integers both positive & negative using BIDMAS including indices & roots.		

	<p><b>Decimals</b>  All – Use non-calculator methods to calculate the product of positive and negative whole numbers. Add/subtract decimals including negative decimals, without a calculator.  Multiply decimals including negative decimals, without a calculator. Know inverse operations  Most – Use non-calculator methods to calculate the product of positive and negative whole numbers in problem solving contexts. Use knowledge of place value and multiplication facts to <math>10 \times 10</math> to derive related multiplication and division facts involving decimals  Some – Without a calculator, divide a decimal by a whole number and integer by simple decimals.</p>		
	<p><b>Factors</b>  All – Use written methods for division Identify prime numbers less than 20  Most – Express a whole number as a product of its prime factors.  Some – Understand that the "remainder" of a division is a fraction.</p>		
	<p><b>Fractions</b>  All – Recognise when two simple fractions are equivalent. Identify &amp; shade a fraction &amp; simple percentage of a shape. Be able to put two or more simple fractions in order. Find a simple fraction of an amount. Convert between simple fractions, decimals &amp; percentages.  Most – Recognise and use equivalence between simple fractions and mixed numbers. Find equivalent fractions with same denominator and use to add and subtract.  Some – Use understanding of a fraction being part of whole to write one quantity as a fraction &amp; as a percentage of another, with or without a calculator. Understand &amp; use place value in decimals to order integers, fractions &amp; decimals. Use division to express a simple fraction as a terminating decimal or vice versa, without a calculator.</p>		

<b>Algebra</b>	<p><b>Substitution</b>  All – Introduction to vocabulary: expressions. Begin to understand the role of '=' (the 'equals' sign) and '≡' (equivalence). To identify like terms and simplify.  Most – Use formula expressed in words or flow chart. Derive expressions from real life situations  Some – Understand and use the concepts and vocabulary of expression &amp; formulae. Use simple formulae involving one or two operations. Substitute decimal numbers into simple expressions and formulae and round answers as specified.</p>		<p><b>Function machines, rearrangement and proof</b>  All – Interpret, use and construct simple expressions as functions.  Most – Use input and output machines including two stage operations and fractions  Some –Use a table of values to plot graphs of linear functions. Rearrange formulae to change the subject, where the subject appears once only involving 2 simple steps</p>
	<p><b>Sequences</b>  All – Describe and continue sequences in diagram and number forms both linear and non-linear. Recognise sequences presented diagrammatically. Find a position-to-term rule for simple arithmetic sequences in words. Recognise sequences of triangular, square and cube numbers. Be able to generate any sequence by spotting a pattern or using a given term-to-term rule  Most – Continue the sequences 1, 4, 9, 16, ...etc  Some – Generate terms of a sequence from nth terms rule. Describe in words the sequence generated by the nth term <math>6n-5</math></p>		<p><b>Plotting and sketching graphs</b>  All – Work with x- and y- coordinates in all four quadrants. Use a table of values to plot graphs of linear functions. Recognise and sketch the graphs of horizontal and vertical lines.  Most – Plot and interpret linear graphs.  Some –Interpret the gradient and intercept of straight lines, graphically and from a table of results. Identify how equation of line relates to gradient and y intercept, introduction to form <math>y=mx+c</math></p>
	<p><b>Expanding and Factorising</b>  All – Recap Expanding single brackets  Most – Introduction to vocab: expressions, equations, formulae, identities inequalities, terms &amp; factors. Confident in expanding single brackets. To be able to factorise single brackets.  Some – Expanding and simplifying brackets and expressions including 2 single brackets.  Confident in expanding and factorising single brackets.</p>		<p><b>Real life Graphs</b>  All – construct and interpret graphs in real-world contexts such as money conversions, temperature conversion, distance-time. To be able to use multiplicative relations to scale up  Most – Solve simple problems involving direct &amp; inverse proportion  Some – Understand the relationship between gradient and ratio.</p>

	<p><b>Solving equations and inequalities</b>  All – Formulate simple formulae and expressions from real-world contexts. Solve simple equations.  Most – Solve linear equations where the unknown is on both sides Interpret solutions in context  Some –Solve linear equations, including brackets and those with the unknown on both sides of the equation, including negative &amp; fractional answers.</p>		
<p style="text-align: center;"><b>Geometry</b></p>		<p><b>Angles</b>  All – Know and use the terms acute, obtuse, right and reflex angles. Know and use the terms point, line and line segment, parallel lines and perpendicular lines. Understand that angles around point total 360, on a straight line and in triangle total 180. Know the names of triangles and their angle properties.  Most – Calculate missing angles using angles around point, straight line, in triangle giving explanations.  Some – Know and use vertically opposite angles are equal; alternate angles on parallel lines are equal; and corresponding angles on parallel lines are equal. Derive and use the sum of the interior angles of a triangle is 180°.</p>	<p><b>Area and Volume</b>  All – Area of a rectangle, triangles, parallelograms, trapeziums, and kites. Area and perimeter of compound shapes made from rectangles.  Most – Finding area of shapes and compound shapes using basic algebraic lengths.  Some – By identifying rectangle cut into sections, calculate the area as whole and as two parts. Given the total area as an algebraic expression identify 2 separate rectangles.  Calculate the volume of cuboids and other right prisms.</p>
		<p><b>Measures</b>  All – Interpret scales on a range of measuring instruments, including mm, cm, m, km, ml, cl, l, mg, g, kg, tonnes. Use and convert standard units of measurement for length, mass, time and money.  Most – Use and convert standard units of measurement for length, mass, time and money. Introduction to ideas of <math>\text{cm}^2</math> to <math>\text{m}^2</math>, <math>\text{cm}^3</math> to <math>\text{m}^3</math>. Solve speed problems involving simple multiples of time or distance.  Some – Convert between metric units of measure for area and volume e.g. <math>\text{cm}^2</math> to <math>\text{m}^2</math>.</p>	<p><b>Circles</b>  All – Understand and use the terms centre, radius, chord, diameter and circumference. Understand pi as a ratio and its relationship of diameter and the circumference of a circle. Calculate circumference of circles given diameter.  Most – Calculate circumference and area of circles given a radius or a diameter.  Some – Find areas of simple composite shapes with semi-circles and quadrants.</p>

		<p><b>Pythagoras (Set 1 and 2)</b>  All – Know and apply Pythagoras’ theorem to find length of hypotenuse in right-angled triangles in 2D figures.  Most – Know and apply Pythagoras’ theorem to find length or hypotenuse in right-angled triangles in 2D figures.  Some – apply Pythagoras’ Theorem to worded/contextual questions.</p>	<p><b>Plans and 3D shapes</b>  All – Construct plans and elevations of simple 3D solids. Make representation of solids from plans and elevations. Interpret plans and elevations of simple 3D solids.  Most – Solve simple surface area and volume problem from diagrammatic information provided in plan and elevation diagrams.  Some – Solve more complex surface area and volume problems from diagrammatic information provided in plan and elevation diagrams.</p>
		<p><b>Scales/Similar Shapes</b>  All – Use and interpret scale drawings. Interpret map/model scales as a ratio. Measure line segments and use simple map scales.  Most – Recognise that similar shapes maintain the same ratios between their sides and have equal angles. Solve simple questions e.g. doubling / halving / x10 for scale factors.  Some – Identify the scale factor of an enlargement as the ratio of the lengths of two corresponding sides.</p>	<p><b>Shape Properties, Congruence and Loci</b>  All – Identify 2D and 3D shapes. Identify faces, surfaces, edges and vertexes of 3D shapes. Work out the order of rotational and the number of lines of symmetry of a 2D shape. To be able to measure angles using a protractor. To be able to draw a line, angle and arc of a given size.  Most – Give a definition of a face, surface, edge and vertex. List the properties of any 2D and 3D shapes. To be able to label correctly and use correct notation  Some – to be able to construct triangles - SSS, ASA and SAS</p>
			<p><b>Transformations</b>  All – To be able to define transformation, reflection, rotation, and enlargement. To be able to reflect a basic shape with a given mirror line. To be able to rotate a basic shape with the centre of rotation in the centre of the shape  Most – to be able to draw the mirror line from a shape and its image. To be able to rotate a simple shape clockwise or anti-clockwise through a multiple of 90° about a given centre of rotation.  Some – Enlarge a simple shape using a whole number positive scale factor and identify the scale factor of an enlargement.</p>

			Transformations of simple shapes using x- and y-coordinates in plane geometry problems
<b>Ratio and Proportion</b>		<p><b>Percentages</b></p> <p>All – Understand percentage is ‘number of parts per hundred’. Find a 50% and 10% of an amount. Be able to convert between basic fractions, decimals, and percentages with and without a calculator.</p> <p>Most – Increase or decrease a quantity by a simple percentage, e.g. by finding 10% and adding.</p> <p>Some – Calculate a percentage of a quantity without a calculator. Increase or decrease a quantity by a simple percentage using 100% and then 10% as starting point. Use that <math>x1 = 100\%</math> to identify simple decimal or fractional multipliers. E.g. increase by 10% = <math>x \ 1.1</math> or <math>110/100</math>.</p>	
		<p><b>Proportion, Ratio and Proportionality</b></p> <p>All – Understand what a ratio means and relate to sharing. Write simple ratios, apply ratio to real contexts and problems. Use ratio notation, including reduction to simplest form, understand equivalent ratios and 1:n.</p> <p>Most – Apply ratio to real contexts and problems (such as those involving mixing, concentrations, and recipes).</p> <p>Some – Identify and work with fractions in ratio problems. Know that ratios can be expressed as fractions. Express the division of a quantity into two parts as a ratio.</p>	
<b>Probability and Data</b>		<p><b>Probability</b></p> <p>All – Use the probability scale as a measure of likelihood of random events, and calculate probabilities of simple events, using appropriate language and the 0 - 1 probability scale. Use terms 'Impossible' for 0, 'Evens' for 0.5 and 'Certain' for 1.</p> <p>Most – Calculate probabilities expressed as fractions, decimals, and percentages in simple</p>	<p><b>Collecting and representing discrete data</b></p> <p>All - Gather discrete data information, and make frequency tables, lists and tally charts. Draw line graphs, bar charts and pictograms and be able to identify the frequency. To be able to find mode, mean, median and range. To be able to construct frequency diagrams and simple vertical line graphs for ungrouped discrete numerical data. Extract and interpret</p>

		<p>experiments with equally likely outcomes. Apply ideas of randomness and fairness and that <math>P(A) + P(\text{not } A) = 1</math>. Use tables and grids to list the outcomes of single events and simple combinations of events, and to calculate theoretical probabilities. Use sample spaces for more complex combinations of event.</p> <p>Some – Calculate theoretical probabilities for simple experiments with equally likely outcomes. Record, describe and analyse the relative frequency of outcomes of repeated experiments using tables. Use a two-circle Venn diagram to enumerate sets and use this to calculate related probabilities.</p>	<p>information, including mode, presented in simple tables, lists, bar charts and pictograms</p> <p>Most – Extract and interpret information, including median and range, presented in simple tables, lists, bar charts and pictograms. To be able to recognise graphical misrepresentation. Use multiple and composite bar charts to compare two sets of data. To be able to create and interpret line graphs.</p> <p>Some – To be able to find the mean in tables, lists, bar charts and pictograms. Interpret graphs and diagrams, including pie charts, and draw conclusions.</p>
			<p><b>Interpreting grouped data</b></p> <p>All – Group data in equal class intervals. Find mode, mean and range from discrete frequency tables.</p> <p>Most – Find the modal class from grouped frequencies</p> <p>Some – Estimate the mean, median and range of a set of grouped data in frequency table. Compare two or more distributions and make inferences, using the shape of the distributions and measures of average and range.</p>
<b>Assessment</b>	<p>Weekly Maths skills (5 questions) – completed as an entry task</p> <p>Homework – at least 3 every half term</p> <p>Topic Tests (3 per half term) – Students will receive written feedback</p>		
	<p>Baseline test: This will predominantly be used to set the students</p>		<p>End of Year Test: Core Paper – all students – decides the tier of the main test. Main test - Higher or Foundation tier.</p>