



<b>Knowledge &amp; Skills development</b>	<b>At Higher Level:</b>  <b>Graphs and Functions</b> <ul style="list-style-type: none"> <li>• Interpret and use <b>function notation</b> in various mathematical contexts.</li> <li>• Construct and evaluate <b>composite functions</b> and find their domains.</li> <li>• Find and verify <b>inverse functions</b>, both algebraically and graphically.</li> <li>• Plot and interpret <b>quadratic and cubic graphs</b>, understanding their key features (roots, turning points).</li> <li>• Understand and sketch <b>reciprocal graphs</b>, including asymptotic behaviour.</li> <li>• Recognise and describe the shape and growth of <b>exponential graphs</b>.</li> <li>• Plot and analyse <b>trigonometric graphs</b> (sine, cosine, tangent), including amplitude and period (E).</li> <li>• Develop the ability to <b>recognise and sketch graphs</b> of standard functions.</li> <li>• Apply <b>translations</b> (E) and <b>reflections</b> (E) to graphs using function notation.</li> </ul>	<b>At Foundation Level:</b>  <b>Number and Properties</b> <ul style="list-style-type: none"> <li>• Understand and identify <b>prime numbers, square numbers, and cube numbers</b>.</li> <li>• Find the <b>product of prime factors</b> using factor trees and notation.</li> <li>• Calculate the <b>HCF (Highest Common Factor)</b> and <b>LCM (Lowest Common Multiple)</b> of numbers.</li> </ul>
		<b>Fractions and Decimals</b> <ul style="list-style-type: none"> <li>• Recognise and convert <b>equivalent fractions</b>.</li> <li>• Understand and use <b>key fraction and decimal equivalents</b> (e.g. <math>\frac{1}{2} = 0.5</math>, <math>\frac{1}{4} = 0.25</math>).</li> <li>• Perform calculations involving <b>adding, subtracting, multiplying, and dividing fractions</b> confidently and accurately.</li> </ul>
		<b>Percentages</b> <ul style="list-style-type: none"> <li>• <b>Work out percentages</b> of amounts, including non-calculator methods.</li> <li>• Solve problems involving <b>percentage increase and decrease</b>, including real-life applications like sales and tax.</li> <li>• Convert between <b>fractions, decimals, and percentages</b> to express quantities in different forms.</li> </ul>
	<b>Equations and Inequalities</b> <ul style="list-style-type: none"> <li>• Develop fluency in <b>forming and solving linear equations</b> in a variety of contexts.</li> <li>• Understand and solve <b>linear inequalities</b>, including representing solutions on number lines.</li> <li>• Work with <b>equations and inequalities with unknowns on both sides</b>.</li> <li>• Tackle <b>more complex equations and inequalities</b> involving brackets, fractions, or multiple steps (E).</li> <li>• Solve <b>quadratic equations</b> by factorising, completing the square, and using the quadratic formula.</li> <li>• Represent and solve <b>quadratic inequalities</b>, interpreting graphical solutions (E).</li> </ul>	<b>Averages and Data Handling</b> <ul style="list-style-type: none"> <li>• Calculate the <b>mean, median, and mode</b> from data sets.</li> <li>• Find the <b>mean from a frequency table and grouped frequency table</b>.</li> <li>• <b>Compare distributions</b> using averages and measures of spread (e.g. range).</li> </ul>
	<b>Ratio and Proportion</b> <ul style="list-style-type: none"> <li>• Compare <b>ratios and fractions</b> to identify equivalence and simplify relationships.</li> <li>• Solve <b>ratio problems</b>, including part-to-part and part-to-whole contexts.</li> </ul>	

	<p><b>Iterative Methods</b></p> <ul style="list-style-type: none"> <li>Understand the concept of <b>iteration</b> as a process for approaching solutions</li> <li>Use <b>iteration</b> to solve equations numerically and understand the limitations and accuracy of the method.</li> </ul>	<ul style="list-style-type: none"> <li>Tackle <b>financial maths problems</b>, including <b>unit pricing</b> and identifying the <b>best value</b>.</li> </ul>
	<p><b>Simultaneous Equations</b></p> <ul style="list-style-type: none"> <li>Solve <b>simultaneous equations</b> algebraically (substitution and elimination) and graphically.</li> <li>Tackle more advanced problems involving <b>one linear and one non-linear equation (E)</b>, including graphical interpretation.</li> </ul>	<p><b>Area, Volume and Geometry</b></p> <ul style="list-style-type: none"> <li>Calculate the <b>area of rectangles, parallelograms, triangles, and circles</b>.</li> <li>Work out the <b>volume of prisms</b> using appropriate formulas.</li> <li>Apply formulae accurately in geometric contexts, linking shapes and measurements.</li> </ul>
	<p><b>Real-World Applications and Units</b></p> <ul style="list-style-type: none"> <li>Apply the <b>speed = distance ÷ time</b> formula and solve problems involving motion.</li> <li>Interpret and sketch <b>distance-time</b> and <b>velocity-time graphs</b>, understanding gradients and areas under curves.</li> <li>Use and convert <b>compound units</b>, including those for <b>density</b> and <b>pressure</b>.</li> <li>Apply mathematical knowledge to interpret and solve problems involving <b>bearings</b>, including using angles and directions accurately.</li> </ul>	<p><b>Transformations and Vectors</b></p> <ul style="list-style-type: none"> <li>Identify and describe <b>reflections and rotations</b> of 2D shapes on a grid.</li> <li>Perform and interpret <b>translations using vectors</b>.</li> <li>Accurately <b>describe and carry out transformations</b> including combinations of transformations.</li> </ul>
<p><b>Assessment / Feedback Opportunities</b></p>	<ul style="list-style-type: none"> <li>Weekly retrieval activities targeting prior and current knowledge</li> <li>Mid-topic formative assessments with therapy follow-up sessions</li> <li>End-of-topic quizzes focused on graphs, algebra, and inequalities</li> <li>Peer/self-assessment tasks using GCSE-style worked solutions</li> <li>Whole-class feedback and targeted interventions</li> </ul>	
<p><b>Key Vocabulary</b></p>	<p>Acceleration, Angle, Area, Area under graph, Asymptote, Average, Axis, Bearings, Best value, Budget, Centre of rotation, Circumference, Circle, Complete the square, Composite function, Compound units, Coordinate, Constant speed, Convert, Cubic, Decimal, Deceleration, Denominator, Density, Direction, Discount, Distance, Distance-time graph, Divide, Domain, Elimination, Enlargement, Equation, Equivalent, Equivalent fractions, Exponential, Expression, Factor, Factorise, Financial maths, Fraction, Frequency, Frequency table, Function, Function notation, Gradient, Graph, Grouped data, HCF, Highest Common Factor, Image, Improper fraction, Inverse function, Integer, Interest, Intercept, Inequality, Indices, Index, Input, Irrational, Iteration, LCM, Line of reflection, Linear, Loss, Lowest Common Multiple, Mass, Mean, Median, Mixed number, Mode, Motion, Multiplier, Multiply, Numerator, Object, Output, Parallelogram, Percentage, Percentage decrease, Percentage increase, Perimeter, Pressure, Prism, Product, Profit, Proportion, Quadratic, Quadratic formula, Radius, Range, Rational, Ratio, Reciprocals, Recurring decimal, Rectangle, Reflection, Reverse percentage, Root, Rotation, Scale factor, Scaling, Shape, Side, Simultaneous equations, Simplify, Sketch, Solution, Solve, Speed, Spread, Square number, Substitution, Surface area, Terminating decimal, Time, Transformation, Transformations, Translate, Translation, Trapezium, Triangle, Trigonometric, Unknown, Value for money, Variable, Vector, Velocity-time graph, Volume, prism, x-axis, y-axis.</p>	

<b>Literacy/Reading opportunities</b>	<ul style="list-style-type: none"> <li>• Structured sentence starters to support written mathematical reasoning</li> <li>• Analysis of multistep worded problems in real-life graph and shape contexts</li> <li>• Reading worked solutions to complex equations and identifying errors</li> <li>• Building vocabulary through glossaries and retrieval-based literacy tasks</li> </ul>
<b>Cross Curricular Themes</b>	<ul style="list-style-type: none"> <li>• Physics – Speed-time graphs and motion equations</li> <li>• Geography – Data interpretation, gradients, and mapping scales</li> <li>• Business – Modelling with real-life graphs and interpreting trends</li> <li>• Computing – Algorithmic thinking and equation solving strategies</li> </ul>
<b>Personal Development (Including British Values, RSE, Citizenship)</b>	<p>Lessons involving percentages, financial maths, and unit pricing support <b>economic literacy</b>, helping students make informed personal and financial decisions, which links directly to <b>Citizenship</b> and <b>RSE</b> themes such as managing money and planning for the future. Topics such as interpreting graphs, comparing distributions, and understanding averages enable students to engage thoughtfully with real-world data, including issues like inequality, public health, and climate change, encouraging <b>active participation in democratic life</b> and developing <b>respect for evidence-based decision-making</b>.</p>
<b>Career Opportunities</b>	<ul style="list-style-type: none"> <li>• Grounding for careers in data analysis, engineering, and finance</li> <li>• Supports applications of mathematical reasoning in healthcare, architecture, and construction</li> <li>• Builds confidence in problem solving for public service and digital technologies sectors</li> </ul>