

	Learning Objectives	Notes, Links across curriculum and starter ideas	Diagnostic Questions
<b>Algebra 1</b>  <b>10 Hours</b>	Substitution and expanding 1,2 or 3 brackets  Solving Linear Equations all types Linear Factorising  Factorising Quadratics  Solving Quadratic Equations	<p><b>Extend</b> by linking to Quadratic graphs, Nth term rule and bounds and expanding three brackets</p> <p>Students should be able to solve equations with unknowns in any order, including fractions and unknowns on both sides.  <b>Extend</b> by linking to Ratio, Area problems, Algebraic Fractions, Angles in Polygons  <b>Extend</b> by linking to Algebraic Proof</p> <p>Students should be able to factorise quadratics with and without a coefficient of x. <b>Extend</b> by completing the square and linking this to quadratic graphs turning points and roots.            Students should be able to solve quadratic graphs by factorising and with formula. <b>Extend</b> by linking to completign the square and algebraic fractions</p>	
<b>Ratio</b> <b>6 Hours</b>	Solving Ratio Problems a. By converting into fractions b. By combining two or more ratio  c. Using ratio to form equations	<p><b>Support</b> by re-capping lowest common multiple, equivalent fractions and solving linear equations. Students should be able to solve problems by converting ratio into fractions, combining two or more ratio by finding common multiples and using ratio to solve equations. <b>Extend</b> by linking to probability trees</p>	
<b>Percentages</b>  <b>5 Hours</b>	Simple Percentage Problems  Compound percentage increase and decrease Reverse Percentage problems Percentage profit or loss	<p><b>Extend</b> by combining simple and compound percentage change, using repeated changing percentages</p>	
<b>Pythagoras and Trigonometry</b>  <b>12 Hours</b>	Solve problems in right angled triangles  Solve problems in non-rightangled triangles Trig graphs and exact trig values  Solve area and perimeter problems Sector Area and Arc length	<p><b>Extend</b> by solving equations using trig in similar triangles  <b>Extend</b> into compound shapes and exact trig angles without a calculator</p> <p><b>Support</b> by reminding of the difference between area and perimiter and practical applications of these</p> <p><b>Support</b> by starting with area and circumference of a circle</p>	
<b>Angles in Polygons</b> <b>2 Hours</b>	Find interior angles of any polygon Find exterior angles of any polygon	<p><b>Support</b> by dividing into triangles: <b>Extend</b> by linking to solving equations and similar shapes</p>	
<b>Similar Shapes</b> <b>3 Hours</b>	Similar Triangles Similar Area Similar Volume	<p><b>Support</b> by linking to ratio and finding scale factors. <b>Extend</b> to finding similar areas when given similar volumes and linking to solids and percentage change.</p>	
<b>Estimation</b> <b>3 Hours</b>	Use significant figures to estimate Solve Speed distance time problems Solve Density mass volume problems	<p><b>Support</b> by ensuring pupils can round to sig fig and can divide by key frations eg. By a half.</p>	
<b>Probability</b> <b>6 Hours</b>	Independent events Conditional probability Relative frequency Permutations and Combinations	<p><b>Support</b> through fractions work. Adding fractions, multiplying fractions, decimals to fractions. <b>Extend</b> by linking to ratio, solving equations</p>	
<b>Measures of Spread</b> <b>7 Hours</b>	Range, quartiles and inter quartile range Understanding outliers and scatter graphs Cumulative frequency and Box Plots Averages from tables Frequency Polygons	<p><b>Extend</b> by using cum freq graphs to draw box plots, comparing distributions and linking continous data table to bounds</p>	
<b>Bounds and inequalities</b> <b>5 Hours</b>	Solve problems using bounds Solve problems through limits of accuracy  Solve inequalities	<p><b>Support</b> through work on rounding and substitution. <b>Extend</b> by linking to speed distance time, denisty  <b>Support</b> - Link back to solving equations. <b>Extend</b> to quadratic inequalities</p>	
<b>Histograms</b> <b>5 Hours</b>	Draw histograms Complete graph and table Proportion problems Find median and quartiles	<p><b>Support</b> through drawing basic graphs and completing graphs and tables. <b>Extend</b> through interpolation to find median and quartiles</p>	
<b>Graphs, inequalities and functions</b> <b>14 Hours</b>	Linear graphs Draw graphs of inequalities  Quadratic graphs Create a use an iteration formula Find an inverse function Interpret gradient of a graph Find an interpret area under a curve	<p><b>Support</b>- draw basic linear graphs. Link back to substitution and nth term. <b>Extend</b> to perpendicular and parallel lines problems using substitution, solving equations and circle theorems</p> <p>Link back to solving inequalities  <b>Support</b> - draw basic graphs using substitution. <b>Extend</b> to finding roots of graphs, solving quadratics graphically and completing the square</p> <p><b>Extend</b> - use factorising to re-arrange a formula where the subject appears twice. Link inverse functions to solvign equations. Link graphs to proportion and speed distance time.</p>	
<b>Transformations</b> <b>6 Hours</b>	Rotation Translation Enlargement Reflection Combinations of transformations	<p><b>Support</b> through links to linear graphs. <b>Extend</b> through negative and fractional enlargment and combinations of transformations</p>	
<b>Circles</b> <b>8 Hours</b>	Area and circumference of a circle Equation of a circle  Circle Theorems	<p><b>Extend</b> by linking to parallel and perpendicular lines</p>	
<b>Vectors</b> <b>8 Hours</b>	All vector problems		