



## Key Stage 3 Curriculum Map Overview

Subject: Maths						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>Year 7</b>	<p><b>Unit Name:</b> Number</p> <p><b>Unit Description:</b> Place values and integers up to 1,000,000 Adding and subtracting including problem solving Multiplication and division including problem solving</p>	<p><b>Unit Name:</b> Number</p> <p><b>Unit Description:</b> Fractions – Equivalent fractions, simplifying fractions and comparing fractions. Fractions – Adding and subtracting fractions, converting between mixed numbers and improper fractions.</p> <p><b>Unit Name:</b> Geometry and Measures</p> <p><b>Unit Description:</b> Properties of 3D Shapes Fractions of shapes and elements of fractions of shapes</p>	<p><b>Unit Name:</b> Number</p> <p><b>Unit Description:</b> Place values – Decimals Multiplying and dividing by 10, 100, 1000 Decimals, percentages and fractions</p>	<p><b>Unit Name:</b> Geometry and Measures</p> <p><b>Unit Description:</b> What would you use to measure Converting between measurements of lengths, capacity and mass. Perimeter, area and volume of rectangles and squares</p>	<p><b>Unit Name:</b> Number</p> <p><b>Unit Description:</b> Place value – negative numbers. Calculating with negative numbers</p> <p><b>Unit Name:</b> Geometry</p> <p><b>Unit Description:</b> Position and direction</p> <p><b>Unit Name:</b> Probability and Statistics</p> <p><b>Unit Description:</b> Simple probability – less likely, more likely, fairness Representing data using bar charts and pie charts</p>	<p><b>Unit Name:</b> Ratio, proportion and rates of change.</p> <p><b>Unit Description:</b> Express one quantity as a ratio of another. Divide a given quantity as a part of another.</p> <p><b>Unit Name:</b> Algebra</p> <p><b>Unit Description:</b> Use simple formula Find pairs of number which satisfy and equations. Generate and describe linear numbers</p>
<b>Year 8</b>	<p><b>Unit Name:</b> Ratio and scale</p> <p><b>Unit Description</b></p> <ul style="list-style-type: none"> <li>• Make connections between number relationships, and their algebraic and graphical representations.</li> <li>• Use scale factors. Scale diagrams and maps.</li> <li>• Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction.</li> <li>• Divide a given quantity into two parts in a given part : part or part : whole ratio;</li> </ul>	<p><b>Unit Name:</b> Fractions and percentages</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics.</li> <li>• Work interchangeably with terminating decimals and their corresponding fractions.</li> <li>• Define percentage as 'number of parts per hundred', interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages,</li> </ul>	<p><b>Unit Name:</b> Angles in parallel lines and polygons</p> <p><b>Unit Description:</b> Year 7 criteria</p> <ul style="list-style-type: none"> <li>• Use language and properties precisely to analyse 2-D shapes.</li> <li>• Begin to reason deductively in geometry including using geometrical constructions.</li> <li>• Describe, sketch and draw using conventional terms and notations; points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are</li> </ul>	<p><b>Unit Name:</b> Ratio and scale (Continuation from Autumn 1)</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• Make connections between number relationships, and their algebraic and graphical representations.</li> <li>• Use scale factors. Scale diagrams and maps.</li> <li>• Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction.</li> <li>• Divide a given quantity into two parts in a given part : part or part : whole ratio; express the division</li> </ul>	<p><b>Unit Name:</b> Sequences</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• Generate terms of a sequence from either a term-to-term or a position-to-term rule</li> <li>• Recognise arithmetic sequences and find the nth term</li> <li>• Recognise geometric sequences and appreciate other sequences that arise</li> </ul> <p><b>Unit Name:</b> Indices</p> <p><b>Unit Description:</b></p>	<p><b>Unit Name:</b> Data Handling (Continued)</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data; and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers)</li> <li>• construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts</li> </ul>

	<p>express the division of a quantity into two parts as a ratio.</p> <ul style="list-style-type: none"> <li>Solve problems involving direct and inverse proportion.</li> </ul> <p><b>Unit Name:</b> Multiplicative change</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>Extend and formalise their knowledge of ratio and proportion in working with measures and in formulating proportional relations algebraically.</li> <li>Interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning.</li> <li>Use scale factors, scale diagrams and maps.</li> <li>Solve problems involving direct and inverse proportion, including graphical and algebraic representations.</li> <li>Move freely between different numerical, algebraic, graphical and diagrammatic representations.</li> </ul> <p><b>Unit Name:</b> Multiplying and dividing with fractions</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>Consolidate their numerical and mathematical capability from key stage 2 and extend their understanding of the number system and place value to include decimals and fractions.</li> <li>Select and use appropriate calculation strategies to solve increasingly complex problems.</li> <li>Use the four operations, including formal written methods, applied to integers, decimals, proper and improper</li> </ul>	<p>and work with percentages greater than 100%</p> <ul style="list-style-type: none"> <li>Interpret fractions and percentages as operators.</li> </ul> <p><b>Unit Name:</b> Representing data</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>Construct and interpret appropriate tables, charts, and diagrams including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data.</li> <li>Describe simple mathematical relationships between two variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs</li> <li>Use language and properties precisely to analyse probability and statistics</li> </ul> <p><b>Unit Name:</b> Line symmetry and reflection</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>Describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric.</li> <li>Identify properties of, and describe the results of reflections applied to given figures.</li> </ul> <p><b>Unit Name:</b> Properties of 3d shapes</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>Understand key terminology used.</li> <li>Vertex</li> <li>Face</li> <li>Edge</li> <li>Be able to describe 3d shapes.</li> </ul>	<p>reflectively and rotationally symmetric.</p> <ul style="list-style-type: none"> <li>Use the standard conventions for labelling sides and angles.</li> <li>Derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures (for example, equal lengths and angles) using appropriate language and technologies.</li> <li>Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles.</li> <li>Apply angle facts, triangle similarity and properties of quadrilaterals to derive results about angles and sides, and use known results to obtain simple proofs.</li> <li>Understand and use the relationship between parallel lines and alternate and corresponding angles (H)</li> <li>Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons (H).</li> </ul> <p>Year 8</p> <ul style="list-style-type: none"> <li>Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles.</li> <li>Understand and use the relationship between parallel lines and alternate corresponding angles.</li> <li>Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons.</li> <li>Use the standard conventions for labelling the sides and angles of triangle ABC</li> <li>Derive and illustrate properties of triangles, quadrilaterals,</li> </ul>	<p>of a quantity into two parts as a ratio.</p> <ul style="list-style-type: none"> <li>Solve problems involving direct and inverse proportion.</li> </ul> <p><b>Unit Name:</b> Brackets, equations and equalities</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>Identify variables and express relationships between variables algebraically</li> <li>Begin to model situations mathematically and express the results using a range of formal mathematical representations</li> <li>Substitute numerical values into formulae and expressions, including scientific formulae</li> <li>Understand and use the concept and vocabulary of expressions, equations, inequalities, terms and factors</li> <li>Simplify and manipulate algebraic expressions to maintain equivalence by:             <ul style="list-style-type: none"> <li>collecting like terms</li> <li>multiplying a single term over a bracket</li> <li>taking out common factors</li> <li>expanding products of two or more binomials</li> </ul> </li> <li>Understand and use standard mathematical formulae</li> <li>Use algebraic methods to solve linear equations in one variable</li> </ul>	<ul style="list-style-type: none"> <li>Use and interpret algebraic notation, including <math>a^3</math> in place of <math>axaxa</math>; <math>a^2b</math> in place of <math>axaxb</math></li> <li>Use language and properties precisely to analyse algebraic expressions</li> <li>Begin to model situations mathematically and express results using a range of formal mathematical representations</li> <li>Substitute values in expressions, rearrange and simplify expressions and solve equations</li> </ul> <p><b>Unit Name:</b> Data Handling</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data; and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers)</li> <li>construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data</li> </ul>	<p>for ungrouped and grouped numerical data</p> <p><b>Unit Name:</b> Area of Trapezia and Circles</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia</li> <li>calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes</li> </ul> <p><b>Unit Name:</b> Standard Index Form</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations</li> <li>interpret and compare numbers in standard form <math>A \times 10^n</math>, <math>1 \leq A &lt; 10</math>, where n is a positive or negative integer or zero</li> </ul>
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	<p>fractions, and mixed numbers, all both positive and negative.</p>	<ul style="list-style-type: none"> <li>• Able to construct / reconstruct 3d shapes from paper / plastic molds / computer images.</li> </ul>	<p>circles and other plane figures (for example, equal lengths and angles) using appropriate language and technologies.</p> <ul style="list-style-type: none"> <li>• Derive and use the standard rule and compass constructions (H)</li> </ul> <p><b>Unit Name:</b> Measures of location</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• Describe, interpret and compare observed distributions of a single variable through appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers).</li> </ul>			
<p><b>Year 9</b></p>	<p><b>Unit Name:</b> Number including prime numbers</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• Use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative.</li> <li>• Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation property.</li> <li>• Interpret and compare numbers in standard form <math>A \times 10^n</math>, <math>1 &lt; n &lt; 10</math> where <math>n</math> is a positive or negative integer or zero.</li> <li>• Appreciate the infinite nature of the sets of integers, real and rational numbers.</li> </ul> <p><b>Unit Name:</b> Using percentages.</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• define percentage as 'number of parts per hundred', interpret</li> </ul>	<p><b>Unit Name:</b> Math's and money</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• Solve problems involving percentage change, including percentage increase, decrease and original value problems and simple interest in financial mathematics.</li> <li>• Select and use appropriate calculation strategies to solve increasingly complex problems.</li> <li>• Interpret when the structure of a numerical problem requires additive multiplicative or proportional reasoning.</li> <li>• Develop their use of formal mathematical knowledge to interpret and solve problems. Including in financial mathematics.</li> </ul>	<p><b>Unit Name:</b> Straight Line Graphs</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• Develop algebraic and graphical fluency, including understanding linear and simple quadratic functions</li> <li>• Recognise, sketch and produce graphs of linear and quadratic functions of one variable with appropriate scaling, using equations in <math>x</math> and <math>y</math> and the cartesian plane</li> <li>• Interpret mathematical relationships both algebraically and graphically</li> <li>• Reduce a given linear equations in two variables to the standard form <math>y=mx+c</math>; calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and algebraically</li> <li>• Use linear and quadratic graphs to estimate values of <math>y</math> for given values of <math>x</math> and vice versa and to find approximate solution of simultaneous linear equations</li> <li>• Solve problems involving direct and inverse proportions,</li> </ul>	<p><b>Unit Name:</b> Constructions and congruency</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• Draw and measure line segments and angles in geometric figures, including interpreting scale drawings</li> <li>• Derive and use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/ at a given point, bisecting a given angle); recognise and use the perpendicular distance from a point to a line as the shortest distance to the line</li> <li>• Describe, sketch and draw using conventional terms and notations points, lines, parallel lines, perpendicular lines, right angles, regular polygons and other polygons that are reflectively and rotationally symmetric</li> <li>• Use the standard conventions for labelling the sides and angles of triangle ABC and know and use the criteria for congruence of triangles</li> </ul> <p><b>Unit Name:</b> Deduction</p>	<p><b>Unit Name:</b> Solving ratios and proportion problems</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• Divide a given quantity into a given part:part or part:whole ratio</li> <li>• Understand that a multiplicative relationship between two quantities can be expressed as a ratio or fraction</li> <li>• Solve problems involving direct and inverse proportions, including graphical and algebraic representation</li> <li>• Use compound units such as speed, unit pricing and density to solve problems</li> </ul> <p><b>Unit Name:</b> Rates</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• Use compound units such as speed, unit pricing and density to solve problems</li> <li>• Understand that a multiplicative relationship between two quantities can be expressed as a ratio or fraction</li> </ul>	<p><b>Unit Name:</b> Rotation and Translation</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• Identify properties of, and describe the results of translations, rotations and reflections applied to given figures</li> <li>• Describe, sketch and draw using conventional terms and notations; point, lines, parallel lines, perpendicular lines, right angles, regular polygons and other polygons that are reflectively and rotationally symmetric.</li> <li>• Develop their mathematical knowledge, in part through solving problem and evaluating the outcomes, including multistep problems</li> </ul> <p><b>Unit Name:</b> Enlargement and Similarity</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• Construct similar shapes by enlargement, with and without coordinate grids</li> </ul>

	<p>percentage changes as a fraction or a decimal, interpret there multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100%.</p> <ul style="list-style-type: none"> <li>• Interpret fractions and percentages as operators.</li> <li>• Solve problems involving percentage change, including percentage increase, decrease and original value problems and simple interest in financial mathematics.</li> </ul> <p><b>Unit Name:</b></p> <ul style="list-style-type: none"> <li>• Math's and money</li> </ul> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• Solve problems involving percentage change, including percentage increase, decrease and original value problems and simple interest in financial mathematics.</li> <li>• Select and use appropriate calculation strategies to solve increasingly complex problems.</li> <li>• Interpret when the structure of a numerical problem requires additive multiplicative or proportional reasoning.</li> <li>• Develop their use of formal mathematical knowledge to interpret and solve problems. Including in financial mathematics.</li> </ul>		<p>including graphical and algebraic representation</p> <p><b>Unit Name:</b> Equations and inequalities -Forming and solving equations <b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• Move freely between different numerical, algebraic, graphical and diagrammatic representations</li> <li>• Use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)</li> <li>• Understand and use standard mathematical formulae; rearrange formulae to change the subject</li> <li>• Model situations or procedures by translating them into algebraic expressions or formulae and by using graphs</li> </ul> <p><b>Unit Name:</b> Testing conjecture</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• Make and test conjectures about patterns and relationships; look for proofs or counter examples</li> <li>• Begin to reason deductively in geometry, number and algebra</li> <li>• Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, HCF, LCM and prime factorisation</li> <li>• Simplify and manipulate algebraic expressions to maintain equivalence by expanding products of two or more binomials.</li> </ul>	<p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• Derive and use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/ at a given point, bisecting a given angle); recognise and use the perpendicular distance from a point to a line as the shortest distance to the line</li> <li>• Describe, sketch and draw using conventional terms and notations points, lines, parallel lines, perpendicular lines, right angles, regular polygons and other polygons that are reflectively and rotationally symmetric</li> <li>• Understand and use the relationship between parallel lines and alternate and corresponding angles</li> </ul>	<ul style="list-style-type: none"> <li>• Change freely between related standard units (e.g. time, length , area, volume capacity and mass)</li> </ul> <p><b>Unit Name:</b> Probability</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• Record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale</li> <li>• Understand that the probability of all possible outcomes sum to 1</li> <li>• Enumerate sets and unions/intersections of sets systemically using tables, grids and Venn diagrams</li> <li>• Generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities.</li> </ul>	<ul style="list-style-type: none"> <li>• Use scale factors, scale diagrams and maps</li> <li>• Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides</li> <li>• Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction.</li> <li>• Use Pythagoras Theorem and trigonometric ratios in similar triangles to solve problems involving right-angled triangles.</li> </ul> <p><b>Unit Name:</b> Revision of intervention</p> <p><b>Unit Description:</b></p> <ul style="list-style-type: none"> <li>• To address any gaps in student's knowledge from years learning.</li> </ul>
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