



Topic Name	Term	Skills Developed*	Link to NC Subject Content	Next link in curriculum	Other Notes
Accuracy and Estimation	Autumn	<ul style="list-style-type: none"> <li>Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes</li> </ul>	<ul style="list-style-type: none"> <li>Round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures]</li> <li>Use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation <math>a &lt; x \leq b</math></li> </ul>	<ul style="list-style-type: none"> <li>Year 8 Autumn – (applications in) Circles and Composite Shapes</li> </ul>	KEY* <ul style="list-style-type: none"> <li>Number</li> <li>Geometry</li> <li>Ratio and Proportion</li> <li>Algebra</li> <li>Statistics</li> </ul>
Circles and Composite Shapes	Autumn	<ul style="list-style-type: none"> <li>Select and use appropriate calculation strategies to solve increasingly complex problems</li> <li>Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems</li> </ul>	<ul style="list-style-type: none"> <li>Use a calculator and other technologies to calculate results accurately and then interpret them appropriately</li> <li>Substitute numerical values into formulae and expressions, including scientific formulae</li> <li>Understand and use standard mathematical formulae; rearrange formulae to change the subject</li> <li>Calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes</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> </ul>	<ul style="list-style-type: none"> <li>Year 8 Spring – Volume and Surface Area of Prisms (including cylinders)</li> </ul>	The accuracy and estimation topic sets up students for this exciting topic as examination style questions on this topic often specify specific rounding. A knowledge of rounding errors will also support students understanding of common mistakes.



Forming and Solving Equations	Autumn	<ul style="list-style-type: none"> <li>Select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems.</li> </ul>	<ul style="list-style-type: none"> <li>Simplify and manipulate algebraic expressions to maintain equivalence by: collecting like terms, multiplying a single term over a bracket, taking out common factors</li> <li>Use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)</li> </ul>	<ul style="list-style-type: none"> <li>Year 8 Autumn – Forming and Solving Inequalities</li> <li>Year 8 Autumn – Linear Graphs</li> <li>Year 8 Summer - Sequences</li> </ul>	This topic leads on well from the use of formulas. Students will then be able to set up equations and solve more difficult problems. This can be applied on extension questions from Circles and Composite shapes.
Forming and Solving Inequalities	Autumn	<ul style="list-style-type: none"> <li>Begin to model situations mathematically and express the results using a range of formal mathematical representations</li> </ul>	<ul style="list-style-type: none"> <li>Understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors</li> <li>Use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)</li> </ul>	<ul style="list-style-type: none"> <li>Year 8 Autumn – Linear Graphs</li> </ul>	This topic consolidates student understanding of solving equations and the concept of equality by introducing inequalities
Linear Graphs	Autumn	<ul style="list-style-type: none"> <li>Extend their understanding of the number system; make connections between number relationships, and their algebraic and graphical representations</li> <li>Identify variables and express relations between variables algebraically and graphically</li> </ul>	<ul style="list-style-type: none"> <li>Model situations or procedures by translating them into algebraic expressions or formulae and by using graphs</li> <li>Recognise, sketch and produce graphs of linear 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 equation 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 graphs to estimate values of <math>y</math> for given values of <math>x</math> and vice versa</li> </ul>	<ul style="list-style-type: none"> <li>Year 8 Summer – Direct and Inverse Proportion</li> </ul>	Linear Graphs is a key topic which is built on at KS4. It is important that students develop a firm understanding of the link between algebraic equations and graphical representations.



Ratio, Real Life Graphs and Rate	Autumn	<ul style="list-style-type: none"><li>● Extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically</li></ul>	<ul style="list-style-type: none"><li>● Divide a given quantity into two parts in a given part:part or part:whole ratio; express the division of a quantity into two parts as a ratio</li><li>● Relate the language of ratios and the associated calculations to the arithmetic of fractions and to linear functions</li><li>● Use standard units of mass, length, time, money and other measures, including with decimal quantities</li><li>● Use scale factors, scale diagrams and maps</li><li>● Use compound units such as speed, unit pricing and density to solve problems</li></ul>	<ul style="list-style-type: none"><li>● Year 8 Summer – Direct and Inverse Proportion</li></ul>	This topic begins with a revision of Ratio, links are then made between Ratio and Linear Graphs by using real-life graphs and making the connection between gradient and rates of change.
Univariate Data	Spring	<ul style="list-style-type: none"><li>● Explore what can and cannot be inferred in statistical settings, and begin to express their arguments formally</li></ul>	<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>	<ul style="list-style-type: none"><li>● Year 8 Summer – Bivariate Data</li></ul>	Students are formally introduced to statistics.



Volume and Surface Area of Prisms	Spring	<ul style="list-style-type: none"> <li>● Use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes</li> <li>● Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems</li> </ul>	<ul style="list-style-type: none"> <li>● Change freely between related standard units [for example time, length, area, volume/capacity, mass]</li> <li>● Derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes) and other prisms (including cylinders)</li> <li>● Use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, to solve problems in 3-D</li> </ul>	<ul style="list-style-type: none"> <li>● Further work in KS4 – Volume (and applications involving forming equations)</li> </ul>	This builds on understanding of Circles and Composite shapes and is also supported by an understanding of the Accuracy and Estimation topic.
Percentages (Growth and Decay)	Spring	<ul style="list-style-type: none"> <li>● Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics</li> </ul>	<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> </ul>	<ul style="list-style-type: none"> <li>● Year 8 Summer – Sequences</li> </ul>	This topic builds on previous percentages work and helps students begin to use percentages as multipliers and hence enhance their use of mathematical language
Angles Review	Spring	<ul style="list-style-type: none"> <li>● Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems</li> </ul>	<ul style="list-style-type: none"> <li>● Understand and use the relationship between parallel lines and alternate and corresponding angles</li> <li>● Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, and use known results to obtain simple proofs</li> </ul>	<ul style="list-style-type: none"> <li>● Year 8 Spring – Angles in Polygons</li> <li>● Year 8 Summer – Bearings</li> </ul>	Students review the angle facts and will attempt to solve more complex problems using previous skills.
Angles in Polygons	Spring	<ul style="list-style-type: none"> <li>● Begin to reason deductively in geometry, number and algebra, including using geometrical constructions</li> </ul>	<ul style="list-style-type: none"> <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> </ul>	<ul style="list-style-type: none"> <li>● Year 8 Spring – Constructions</li> </ul>	This builds on the Parallel Lines Review



Constructions	Spring	<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, number and algebra, including using geometrical constructions</li></ul>	<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></ul>	<ul style="list-style-type: none"><li>• Year 8 Summer – Bearings</li></ul>	This builds on the work on Angles and provides additional opportunities for hands on learning through the use of a compass and ruler.
Bearings	Summer	<ul style="list-style-type: none"><li>• Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems</li></ul>	<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 and corresponding angles</li></ul>	<ul style="list-style-type: none"><li>• Further work in KS4 – Bearings and Angles</li></ul>	This builds on the work on Angles and Constructions
Sequences	Summer	<ul style="list-style-type: none"><li>• Make and test conjectures about patterns and relationships; look for proofs or counter-examples</li></ul>	<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 <math>n</math>th term</li><li>• Recognise geometric sequences and appreciate other sequences that arise</li></ul>	<ul style="list-style-type: none"><li>• Further work in KS4 – Linear and Quadratic Sequences</li></ul>	This builds on student understanding of expressions covered previously in the algebraic topics



Bivariate Data	Summer	<ul style="list-style-type: none"><li>● Explore what can and cannot be inferred in statistical settings, and begin to express their arguments formally</li></ul>	<ul style="list-style-type: none"><li>● Describe simple mathematical relationships between two variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs.</li></ul>	<ul style="list-style-type: none"><li>● Further work in KS4 – Representing Data</li></ul>	Students have an opportunity to work on statistics again, building on the previous topic of univariate data.
Direct and Inverse Proportion	Summer	<ul style="list-style-type: none"><li>● Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems</li></ul>	<ul style="list-style-type: none"><li>● Use standard units of mass, length, time, money and other measures, including with decimal quantities</li><li>● Solve problems involving direct and inverse proportion, including graphical and algebraic representations</li></ul>	<ul style="list-style-type: none"><li>● Further work in KS4 – Direct and Inverse Proportion</li></ul>	Links are made to the previous topic of Linear Graphs and Ratio. Here the links between ratio and algebra are consolidated and extended.

\* Throughout the entire curriculum, content and skills are revisited and reused continuously. The colour code refers to the main strand each topic falls under.