| Topic Name | Term | Skills Developed\* | Link to NC Subject Content | Next link in curriculum | Other Notes |
| --- | --- | --- | --- | --- | --- |
| SEQUENCES | Autumn | * Begin to reason deductively in geometry, number and algebra, including using geometrical constructions * Use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships | * Move freely between different numerical, algebraic, graphical and diagrammatic representations * Make and test conjectures about patterns and relationships * Generate sequences from a term-to-term rule * Recognise arithmetic and geometric sequences | * Year 8 Spring - Sequences |  |
| RATIO AND SCALE | Autumn | * Make connections between number relationships, and their algebraic and graphical representations | * Use scale factors, scale diagrams and maps * Divide a given quantity into two parts in a given ratio * Solve problems involving direct or inverse proportion | * Year 8 Spring - Multiplicative Change | KEY\*   | Number | | --- | | Geometry | | Ratio and Proportion | | Algebra | | Statistics | |
| MULTIPLICATIVE CHANGE | Autumn | * Extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically | * Solve problems involving direct or inverse proportion, including graphical and algebraic representations | * Year 9 Summer - Solving ratio and proportion problems |  |
| MULTIPLYING AND DIVIDING FRACTIONS | Autumn | * Extend their understanding of the number system and place value to include decimals, fractions, powers and roots | * Find the product of any pair of fractions * Understand and use the reciprocal * Divide any pair of fractions * Multiply and divide improper fractions and mixed numbers | * Year 8 Spring - Fractions and Percentages |  |
| WORKING IN THE CARTESIAN PLANE | Autumn | * Move freely between different numerical, algebraic, graphical and diagrammatic representations [for example, equivalent fractions, fractions and decimals, and equations and graphs] | * Identify and draw lines that are parallel to the axes * Recognise and use lines of the forms y=ka, y=x+a * Plot graphs of the form y=mx+c | * Year 9 Autumn - Straight line graphs |  |
| REPRESENTING DATA | Autumn | * 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 | * Draw and interpret scatter graphs * Identify different types of data and work with frequency tables (ungrouped and grouped) * Represent data in two-way tables | * Year 8 Autumn - Tables and Probability |  |
| SETS AND PROBABILITY | Autumn | * Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems | * Understand that the probabilities of all possible outcomes sum to 1 * Enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams | * Year 8 Autumn - Tables and Probability |  |
| TABLES AND PROBABILITY | Autumn | * Use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics | * 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 * Enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams | * Year 9 Summer - Probability |  |
| BRACKETS, EQUATIONS AND INEQUALITIES | Spring | * Develop algebraic and graphical fluency, including understanding linear and simple quadratic functions | * Simplify and manipulate algebraic expressions to maintain equivalence by: * collecting like terms * multiplying a single term over a bracket * taking out common factors * expanding products of two or more binomials | * Year 9 Autumn - Forming and Solving Equations |  |
| SEQUENCES | Spring | * Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems | * Recognise arithmetic sequences and find the nth term * Recognise geometric sequences and appreciate other sequences which may arise | * Year 9 Autumn - Straight line graphs |  |
| INDICES | Spring | * Use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics | * Simplifying expressions by multiplying and dividing indices * Use the addition and subtraction law for indices | * Year 9 Summer - Algebraic representation |  |
| FRACTIONS AND PERCENTAGES | Spring | * Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics | * Calculate percentage increase and decrease using a multiplier * Work with percentage change * Choose the most appropriate method to solve problems | * Year 9 Spring - Using Percentages |  |
| STANDARD INDEX FORM | Spring | * Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems | * Interpret and compare numbers in standard form A x 10n 1≤A<10, where n is a positive or negative integer or zero | * Year 9 Spring - Numbers |  |
| NUMBER SENSE | Spring | * Select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems | * Solving problems in a wide variety of contexts, including with the calendar and time. | * Year 9 Spring - Numbers |  |
| ANGLES IN PARALLEL LINES AND POLYGONS | Summer | * Begin to reason deductively in geometry, number and algebra, including using geometrical constructions | * Identify and calculate with alternate, corresponding and co-interior angles * Solve complex problems with parallel line angles * Calculate missing interior and exterior angles in polygons | * Year 9 Autumn - Constructions and Congruency |  |
| AREA OF TRAPEZIA AND CIRCLES | Summer` | * Use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics | * Calculate the area of a trapezium * Investigate the area of a circle * Calculate the area of a circle and parts of a circle with/without a calculator | * Year 9 Autumn - Three dimensional shapes |  |
| LINE SYMMETRY AND REFLECTION | Summer | * Use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics | * 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 | * Year 9 Spring - Rotation and Translation |  |
| THE DATA HANDLING CYCLE | Summer | * Explore what can and cannot be inferred in statistical and probabilistic settings, and begin to express their arguments formally | * 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 | * KS4/GCSE |  |
| MEASURES OF LOCATION | Summer | * Explore what can and cannot be inferred in statistical and probabilistic settings, and begin to express their arguments formally | * 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) | * KS4/GCSE |  |

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