

Term	NC Topics	Assessment
AUTUMN	<p>Fractions and Percentages</p> <ul style="list-style-type: none"> develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics work interchangeably with terminating decimals and their corresponding fractions 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, and work with percentages greater than 100% interpret fractions and percentages as operators <p>Standard Index Form</p> <ul style="list-style-type: none"> 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 interpret and compare numbers in standard form $A \times 10^n$, $1 \leq A < 10$, where n is a positive or negative integer or zero <p>Angles in Parallel Lines and Polygons</p> <ul style="list-style-type: none"> apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles understand and use the relationship between parallel lines and alternate and corresponding angles 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 use the standard conventions for labelling the sides and angles of triangle ABC derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies derive and use the standard ruler and compass constructions (H only) <p>Area of Trapezia and Circles</p> <ul style="list-style-type: none"> derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes 	<p>Low stakes testing at the end of each "block" (the titles in bold). In order to RAMP</p> <p>Summative Assessment at the end of each term, used to determine progress.</p>

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	<p>The Data Handling Cycle</p> <ul style="list-style-type: none"> 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) 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 	
SPRING	<p>Straight Line Graphs</p> <ul style="list-style-type: none"> develop algebraic and graphical fluency, including understanding linear and simple quadratic functions recognise, sketch and produce graphs of linear and quadratic functions of one variable with appropriate scaling, using equations in x and y and the Cartesian plane interpret mathematical relationships both algebraically and graphically reduce a given linear equation in two variables to the standard form $y = mx + c$; calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and algebraically use linear and quadratic graphs to estimate values of y for given values of x and vice versa and to find approximate solutions of simultaneous linear equations solve problems involving direct and inverse proportion, including graphical and algebraic representations <p>Forming and Solving Equations</p> <ul style="list-style-type: none"> move freely between different numerical, algebraic, graphical and diagrammatic representations [for example...equations and graphs] use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement) understand and use standard mathematical formulae; rearrange formulae to change the subject model situations or procedures by translating them into algebraic expressions or formulae, and by using graphs <p>Testing Conjectures</p> <ul style="list-style-type: none"> make and test conjectures about patterns and relationships; look for proofs or counterexamples begin to reason deductively in geometry, number and algebra use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation simplify and manipulate algebraic expressions to maintain equivalence by expanding products of two or more binomials 	<p>Low stakes testing at the end of each "block" (the titles in bold). In order to RAMP</p> <p>Summative Assessment at the end of each term, used to determine progress.</p>

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	<p>Three-Dimensional Shapes</p> <ul style="list-style-type: none"> • use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes • use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D • 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) <p>Constructions and Congruency</p> <ul style="list-style-type: none"> • draw and measure line segments and angles in geometric figures, including interpreting scale drawings • 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 • 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 • use the standard conventions for labelling the sides and angles of triangle ABC, and know and use the criteria for congruence of triangles 	
SUMMER	<p>Deduction</p> <ul style="list-style-type: none"> • 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 • 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 • apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles • understand and use the relationship between parallel lines and alternate and corresponding angles <p>Rotation and Translation</p> <ul style="list-style-type: none"> • identify properties of, and describe the results of, translations, rotations and reflections applied to given figures • 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 • develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems 	<p>Low stakes testing at the end of each “block” (the titles in bold). In order to RAMP</p> <p>Summative Assessment at the end of each term, used to determine progress.</p>

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	<p>Pythagoras' Theorem</p> <ul style="list-style-type: none"> • use Pythagoras' Theorem to solve problems involving right-angled triangles • apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs • interpret mathematical relationships both algebraically and geometrically • begin to reason deductively in geometry, number and algebra, including using geometrical constructions • begin to model situations mathematically and express the results using a range of formal mathematical representations <p>Enlargement and Similarity</p> <ul style="list-style-type: none"> • construct similar shapes by enlargement, with and without coordinate grids • use scale factors, scale diagrams and maps • apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides • understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction • use Pythagoras' Theorem and trigonometric ratios in similar triangles to solve problems involving right-angled triangles <p>Solving ratio and proportion problems</p> <ul style="list-style-type: none"> • 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 • understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction • solve problems involving direct and inverse proportion, including graphical and algebraic representations • use compound units such as speed, unit pricing and density to solve problems <p>Probability</p> <ul style="list-style-type: none"> • 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 • 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 • generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities 	