



	Algebra	Number	Geometry	Statistics and Probability
Mastering	<ul style="list-style-type: none"> Expand and simplify expressions with double brackets Use index laws including fractional and negative indices Rearrange formulae where the subject is negative, appears in a denominator, appears twice or involves powers Factorise basic quadratics – DOTS Simplify algebraic fractions by factorising Distinguish between equations, formulae and identities Use the gradient formula when given two points Understand relationship between the gradients of parallel and perpendicular lines Plot and use the graphs of quadratic, cubic, exponential and reciprocal functions Derive and solve simultaneous equations algebraically Solve linear inequalities Find and use the nth term of quadratic sequences Explore the long term behaviour of sequences defined recursively 	<ul style="list-style-type: none"> Solve problems involving measurement using upper and lower bound. Convert a recurring decimals using algebra methods Work out a percentage change using a decimal multiplier and carry out repeat operations eg compound interest. Use a calculator for complex calculations involving powers, roots and fractions. Use the rules of surds- negative and fractional Use index notation for square roots and cubes Solve problems involving proportional reasoning, including financial problems 	<ul style="list-style-type: none"> Give error intervals for measurements Differentiate between number/length/area/vol. with regards to units Prove congruency Use knowledge of congruent shapes to find missing angles Calculate arc lengths Calculate arses of sectors Write scale in the form 1:n Use similarity to solve problems Use Pythagoras’ Theorem in 3D geometry Use trigonometry to find missing angles and sides of triangles Use trigonometry and bearings to solve problems 	<ul style="list-style-type: none"> Writing an hypothesis Using words such as sample, population and bias when problem solving Frequency polygons and histograms Moving averages Finding the median and interquartile range from a cumulative frequency graph Comparing cumulative frequencies and box plots Calculate probabilities for combined events using tree diagrams and Venn diagrams Problem solving with experimental probabilities Developing an understanding of simulation or models
Deepening	<ul style="list-style-type: none"> Factorise linear expressions Derive and graph formulae Identify equivalent algebraic fractions Add and subtract simple algebraic fractions Find the gradient and y-intercept of linear graphs Use $y = mx + c$ to find the gradient and y-intercept of graphs Plot the graph of an implicit function Solve multi-step equations including with brackets, fractions and negative algebraic terms Solve non-linear equations using a trial and improvement method Find and use the nth term of linear sequences Derive (then solve) equations from worded problems 	<ul style="list-style-type: none"> Find the upper and lower bound of a whole number and decimal. Find the reciprocal of a number Solve problems involving percentage change Be able to reverse a percentage and find the original amount in one step using a multiplier Solve problems in context involving fractions Simplify surds Be able to convert to and from standard form Use ratio and proportions to interpret maps and scale drawing Solve problems involving direct proportions and scale factor Solve problems in everyday life involving ratios 	<ul style="list-style-type: none"> Calculate the area of a circle/semi-circle Name all parts of a circle Calculate interior and exterior angles of polygons Use (positive) fractional scale factors Understand and use map scales Find the surface area and volume of prisms Convert squared and cubic units Calculate the circumference of a semi-circle Calculate missing lengths of right-angled triangles using Pythagoras’ Theorem Recognise and use common compound measures Properties of polygons Find missing angles in polygons Construct RHS triangles Describe and construct complex loci Calculate bearings Perform and identify combinations of transformations Identify planes of symmetry of 3D shapes 	<ul style="list-style-type: none"> Calculate averages from a list, frequency table, and from a grouped frequency table Compare the results of an enquiry Compare distributions Problem solving with Venn Diagrams Independent events Problem solving with tree diagrams
Securing	<ul style="list-style-type: none"> Recognise, construct and use contextual expressions and formulae Rearrange basic formulae Solve simultaneous equations graphically Construct and interpret real life graphs and time series graphs Describe sequences using recursive formulae Use indices to simplify expressions Draw lines parallel to axes, given their equation Solve multi-step equations inc brackets and the unknown on both sides 	<ul style="list-style-type: none"> Use prime factors decomposition and Venn diagrams to find the LCM and HCF Use rounding to estimate a calculation Round a number to a significant figure Convert between fractions decimals and percentages Carry out all four operations with fractions with different denominators, with mixed numbers, or improper fractions Express one number as a fraction or percentage of another number Add subtract multiply and divide decimals and negative numbers using both written and mental methods Interpret a calculator display Use order of operation correctly Use a calculator and interpret the display 	<ul style="list-style-type: none"> Find missing sides of triangles, trapezia and parallelograms, given the area Identify congruent shapes Properties of polygons Find missing angles in a quadrilateral Angle proofs Calculate areas of triangles, parallelograms and trapezia by formula Enlarge an object given a (positive integer) scale factor about a point Identify the (positive integer) scale factor of a completed enlargement Describe a single transformation Construct quadrilaterals Be able to draw a plan, side and front elevation of a 3D shape Find the perimeter of all 2D shapes Calculate the circumference of a circle Measure or calculate bearings 	<ul style="list-style-type: none"> Use grouped frequency tables and charts Plan and write a statistical report Use and interpret time series graphs Design a questionnaire and recognise problems with a survey Grouping data and comparing data Equally likely outcomes Venn diagrams and using notation Mutually exclusive events Drawing tree diagrams and two way tables Comparing theoretical and experimental probabilities

Securing		<ul style="list-style-type: none"> ● Solve problems with percentages inc money problems ● Find a percentage increase or decrease using a multiplier ● Calculate percentage change ● Use and simplify an expression using the rules of indices ● Find square roots and cube roots ● Write a number in standard form ● Divide a ratio into a given quantity ● Long and short division ● BIDMAS calculations ● Multiply and divide by 10, 100, 0.1, 0.01 	<ul style="list-style-type: none"> ● Construct simple loci ● Construct SSS triangles ● Produce a scale drawing ● Convert between metric and imperial measures (given one conversion fact) ● Surface area and volume of cuboids ● Find a length given the volume and cross-sectional area of a prism 	
Developing	<ul style="list-style-type: none"> ● Expand and simplify expressions with single brackets, powers and division ● Substitute values into contextual expressions and formulae ● Generate a table of values to draw a straight line graph ● Derive and solve equations from worded problems ● Find and use position-to-term rules that describe sequences of numbers ● Use sequences to solve contextual problems ● Find and use term-to-term rules that describe sequences of numbers ● <i>Identify missing coordinates to construct shapes</i> 	<ul style="list-style-type: none"> ● Multiplying and dividing by powers of 10 eg 100, 1000... ● Write a number as a product of its primes. ● Use index notation for integer and powers ● Add fractions with different denominators ● Convert fractions to and from mixed numbers and improper fractions ● Simplify fractions ● Order decimals ● Order fractions by converting into decimals ● Write a recurring decimal as a fraction ● Multiply fractions by a whole number ● Use index notation ● Use percentages to compare proportions ● Estimate a square root ● Use calculator buttons for complex calculations ● Solve ratio problems inc sharing 	<ul style="list-style-type: none"> ● Calculate areas and perimeters of compound shapes inc trapezia, parallelograms, triangles ● Convert freely between metric units ● Properties of quadrilaterals and angles in a quadrilateral ● Transform objects given instructions (reflect, rotate and translate) ● Give translations in vector form ● Identify the order of rotational symmetry and lines of symmetry inc diagonal lines ● Identify the scale factor of an enlargement ● Construct SAS, ASA and SSS triangles ● Isometric drawings ● Name 3D shapes and their parts ● Calculate missing angles in a triangle ● Identify parallel lines ● Calculate the volume and surface area of a cuboid by formula ● Use a protractor to measure bearings and give them as three figures ● Describe and construct simple loci ● Construct bisectors and perpendiculars ● Calculate bearings ● Read scales ● Produce a scale drawing ● Produce isometric drawings 	<ul style="list-style-type: none"> ● Interpret and draw charts inc bar charts and pie charts ● Calculate averages ● Use and plot scatter graphs ● Understand correlation ● Stem and leaf diagrams ● <i>Identify correlation</i> ● List outcomes ● Theoretical probability ● Sample space diagrams ● Introduction to tree diagrams ● Experimental probability questions ● Calculate probabilities ● Use Venn diagrams
Emerging	<ul style="list-style-type: none"> ● Identify the equations of horizontal and vertical graphs ● Understand properties of straight line graphs ● Use inequality symbols ● Solve multi-step equations using inverses and balancing ● Substitute integers into simple expressions 	<ul style="list-style-type: none"> ● Order decimals and negative numbers ● Recognise and list multiples, factors and primes ● Work out calculations with BIDMAS ● Add fractions with the same denominator ● Find the percentage/fraction of a quantity ● Convert fractions decimals and percentages ● Use mental methods to add and subtract fractions with the same denominator ● Use column method to add and subtract whole numbers and decimals ● Find square numbers and square roots ● Simplify ratios ● Use a scale eg on a map ● Solve problems involving all four operations ● Use a calculator to answer more complex calculations 	<ul style="list-style-type: none"> ● Calculate complementary/ supplementary/explementary angles ● Names of triangles ● Calculate missing angles in triangles ● Find the surface area and volume of a 3D shape by counting squares ● Identify order of rotational symmetry of a shape ● Identify lines of symmetry on a shape ● Enlarge an object by a (positive integer) scale factor ● Identify the (positive integer) scale factor of an enlargement ● Reflect, rotate and translate, given instructions in words ● Use a protractor to measure angles ● Identify perpendicular lines ● Construct perpendicular lines and SAS triangles ● Draw nets of 3D shapes ● Tessellate shapes ● <i>Calculate the perimeter of compound shapes</i> ● <i>Calculate area of squares and rectangles</i> ● <i>Find missing sides of a shape, given the perimeter</i> 	<ul style="list-style-type: none"> ● Design a survey ● Collect data ● Use a tally chart and frequency tables ● Draw a bar or pie chart or frequency diagram inc for grouped data ● Find averages and range from frequency tables ● Interpret a bar or pie chart ● <i>Identify discrete or continuous data</i> ● <i>Find averages and range from a list of data</i> ● Probability scale ● Use fractions and decimals to represent probability ● Compare sets of data