

Maths Curriculum Map

	Year 7	Year 8	Year 9	Year 10	Year 11
Autumn 1	<p>Sequences Describe and continue a sequence given diagrammatically Predict and check the next terms of a sequence Represent sequences in tabular and graphical forms Recognize the difference between linear and non-linear sequences Continue numerical linear sequences Continue numerical non-linear sequences Explain the term-to-term rule of numerical sequences in words Find missing numbers within sequences</p> <p>Understand and use algebraic notation Given a numerical input, find the output of a single function machine Use inverse operations to find the input given the output Use diagrams and letters to generalize number operations Use diagrams and letters with single function machines Find the function machine given a simple expression Substitute values into single operation expressions Find numerical inputs and outputs for a series of two function machines Use diagrams and letters with a series of two function machines Find the function machines given a</p>	<p>Ratio and scale Students can understand the meaning and representation of ratio Students can understand and use ratio notation Students can solve problems involving ratios of the form 1 : n (or n : 1) Students can solve problems involving ratios of the form m : n Students can divide in a given ratio Students can express ratios in their simplest integer form Students can express ratios in the form 1 : n Students can compare ratios and fractions Students can understand pi as a ratio Students can understand gradient as a ratio</p> <p>Multiplicative change Students can solve problems involving direct proportion Students can explore conversion graphs Students can convert between currencies Students can explore direct proportion graphs Students can explore relationships between similar shapes Students can understand scale factors as multiplicative representations Students can draw and interpret</p>	<p>Straight line graphs Lines parallel to the axis, $y=x$ and $y=-x$ Using tables of values Compare gradients Compare y intercept Understand $y = mx + c$ Write an equation in the form of $y = mx + c$ Find the equation of a line from a graph Interpret gradients and intercepts in real life graphs Model real-life graphs involving inverse proportion Explore perpendicular lines</p> <p>Forming and solving equations Solve one and two step equations and inequalities solve one and two step equations and inequalities with brackets Inequalities with negative numbers Solve equations with unknowns on both sides Solve inequalities with unknowns on both sides Solve equations and inequalities in context Substituting into equations and formulae Rearrange formulae (one step) Rearrange formulae (two step) Rearrange complex formulae including brackets and squares</p>	<p>Congruence, similarity & enlargement Enlarge a shape by a positive integer scale factor Enlarge a shape by a fractional scale factor Enlarge a shape by a negative scale factor Identify similar shapes Work out missing sides and angles in a pair given similar shapes Use parallel line rules to work out missing angles Establish a pair of triangles are similar Explore areas of similar shapes Explore volumes of similar shapes Solve mixed problems involving similar shapes Understand the difference between congruent triangles Prove a pair of triangles are congruent Explore ratio in similar right-angled triangles Work fluently with the hypotenuse, opposite and adjacent sides</p> <p>Trigonometry Work fluently with the hypotenuse, opposite and adjacent sides Use the tangent ratio to find missing side lengths Use the sine and cosine ratio to find missing side lengths Use sine, cosine and tangent to find missing angles</p>	<p>Gradients & Lines Equations of lines parallel to the axis Plot straight line graphs Interpret $y = mx + c$ Find the equation of a straight line from a graph (1) Find the equation of a straight line from a graph (2) Equation of a straight-line graph given one point and gradient Equation of a straight-line graph given two points Determine whether a point is on a line Solve linear simultaneous equations graphically Recognise when straight lines are perpendicular Find the equations of perpendicular lines</p> <p>Non-linear Graphs Plot and read from quadratic graphs Plot and read from cubic graphs Plot and read from reciprocal graphs Recognise graph shapes Identify and interpret roots and intercepts of quadratics Understand and use exponential graphs Find and use the equation of a circle centre (0, 0) Find the equation of the tangent to any curve</p>

	<p>two-step expression Generate sequences given an algebraic rule Represent one and two-step functions graphically</p> <p><u>Equality and equivalence</u> Understand the meaning of equality Understand and use fact families, numerically and algebraically Solve one-step linear equations involving +/- using inverse operations Solve one-step linear equations involving x/+ using inverse operations Understand the meaning of like and unlike terms Understand the meaning of equivalence Simplify algebraic expressions by collecting like terms, using the \equiv symbol</p>	<p>scale diagrams Students can interpret maps using scale factors and ratios</p> <p><u>Multiplying and dividing fractions</u> Students can represent multiplication of fractions Students can multiply fraction by an integer Students can find the product of a pair of unit fractions Students can divide an integer by a fraction Students can divide a fraction by a unit fraction Students can understand and use the reciprocal Students can divide any pair of fractions Students can multiply and divide improper and mixed fractions Students can multiply and divide algebraic fractions</p>	<p><u>Testing conjectures</u> Factors, multiples and primes True or false? Always, sometimes, never true Show that Conjectures about number Expand a pair of binomials Conjectures with algebra Explore the 100 grid</p>	<p>calculate sides in right-angled triangles using Pythagoras' Theorem Select the appropriate method to solve right-angled triangle problems Work with key angles in right-angled triangles Use trigonometry in 3-D shapes Use the formula $\frac{1}{2}ab\sin C$ to find the area of a triangle Understand and use the sine rule to find missing lengths Understand and use the sine rule to find missing angles Understand and use the cosine rule to find missing lengths Understand and use the cosine rule to find missing angles Choosing and using the sine and cosine rules</p>	<p><u>Using Graphs</u> Reflect shapes in given lines Construct and interpret conversion graphs Construct and interpret other real-life straight line graphs Interpret distance/time graphs Construct distance/time graphs Construct and interpret speed/time graphs Construct and interpret piece-wise graphs Recognise and interpret graphs that illustrate direct and inverse proportion Find approximate solutions to equations using graphs Estimate the area under a curve</p>
Autumn 2	<p><u>Place value and ordering integers and decimals</u> Recognise the place value of any number in an integer up to one billion Understand and write integers up to one billion in words and figures Work out intervals on a number line Position integers on a number line Round integers to the nearest power of ten Compare two numbers using $=, \neq, <, \leq, \geq$ Order a list of integers Find the range of a set of numbers Find the median of a set of numbers Understand place value for</p>	<p><u>Working in the Cartesian plane</u> Students can work with coordinates in all four quadrants Students can identify and draw lines that are parallel to the axes Students can recognise and use the line $y = x$ Students can recognise and use lines of the form $y = kx$ Students can link $y = kx$ to direct proportion Students can explore the gradient of the line $y = kx$ Students can recognise and use lines of the form $y = k + x$ Students can explore graphs with negative gradient ($y = -kx, y = a - x, x + y = a$) Students can link graphs to linear</p>	<p><u>Three dimensional shapes</u> Know names of 2D and 3D shapes Recognise prisms (including language of vertices/edges) Acute nets of cuboids and other 3D shapes Sketch and recognise nets of cuboids and other 3D shapes Plans and elevations Find area of 2D shapes Surface area of cubes and cuboids Surface area of triangular prisms Surface area of cylinders Volume of cubes and cuboids Volume of other 3D shapes - prisms and cylinders Explore volumes of cones, spheres and pyramids</p>	<p><u>Representing solutions of equations & inequalities</u> Understand the meaning of a solution Form and solve one-step and two-step equations Form and solve one-step and two-step inequalities Show solutions to inequalities on a number line Interpret representations on number lines as inequalities Represent solutions to inequalities using set notation Draw straight line graphs Find solutions to equations using straight line graphs Represent solutions to single</p>	<p><u>Expanding & factorising</u> Expand and factorise with a single bracket Expand binomials Factorise quadratic expressions Factorise complex quadratic expressions Solve equations equal to 0 Solve quadratic equations by factorisation Solve complex quadratic expressions by factorisation Complete the square Solve quadratic equations using the quadratic formula</p> <p><u>Changing the subject</u> Solve linear equations</p>

<p>decimals</p> <p>Position decimals on a number line</p> <p>Compare and order any number up to one billion</p> <p>Round a number to 1 significant figure</p> <p>Write 10, 100, 1000 etc. as powers of ten</p> <p>Write positive integers in the form $A \times 10^n$</p> <p>Investigate negative powers of ten</p> <p>Write decimals in the form $A \times 10^n$</p> <p><u>FDP Equivalence</u></p> <p>Represent tenths and hundredths as diagrams</p> <p>Represent tenths and hundredths on number lines</p> <p>Interchange between fractional and decimal number lines</p> <p>Convert between fractions and decimals – tenths and hundredths</p> <p>Convert between fractions and decimals – fifths and quarters</p> <p>Convert between fractions and decimals – eighths and thousandths</p> <p>Understand the meaning of percentage using a hundred square</p> <p>Convert fluently between simple fractions, decimals and percentages</p> <p>Use and Interpret pie charts</p> <p>Represent any fraction as a diagram</p> <p>Represent fractions on number lines</p> <p>Identify and use simple equivalent fractions</p> <p>Understand fractions as division</p> <p>Convert fluently between fractions, decimals and percentages</p> <p>Explore fractions above one,</p>	<p>sequences</p> <p>Students can plot graphs of the form $y = mx + c$</p> <p>Students can explore non-linear graphs</p> <p>Students can find the midpoint of a line segment</p> <p><u>Representing Data</u></p> <p>Students can draw and interpret scatter graphs</p> <p>Students can understand and describe linear correlation</p> <p>Students can draw and use line of best fit (1) & (2)</p> <p>Students can identify non-linear relationships</p> <p>Students can identify different types of data</p> <p>Students can read and interpret ungrouped frequency tables</p> <p>Students can read and interpret grouped frequency tables</p> <p>Students can represent grouped discrete data</p> <p>Students can represent continuous data grouped into equal classes</p> <p>Students can represent data in two-way tables</p> <p><u>Tables and Probability</u></p> <p>Students can construct sample spaces for 1 or more events</p> <p>Students can find probabilities from a sample space</p> <p>Students can find probabilities from two-way tables</p> <p>Students can find probabilities from Venn diagrams</p> <p>Students can use the product rule for finding the total number of possible outcomes</p>	<p><u>Constructions and Congruency</u></p> <p>Draw and measure angles</p> <p>Construct and interpret scale drawings</p> <p>Locus of distance from a point</p> <p>Locus of distance from a line or shape</p> <p>Locus equidistant from two points</p> <p>Construct a perpendicular bisector</p> <p>Construct a perpendicular from a point</p> <p>Construct a perpendicular to a point</p> <p>Locus of distance from 2 lines</p> <p>Construct an angle bisector</p> <p>Construct triangles from given information</p> <p>Identify congruent figures</p> <p>Explore congruent triangles</p> <p>Identify congruent triangles</p>	<p>inequalities on a graph</p> <p>Represent solutions to multiple inequalities on a graph</p> <p>Form and solve equations with unknowns on both sides</p> <p>Form and solve inequalities with unknowns on both sides</p> <p>Form and solve more complex equations and inequalities</p> <p>Solve quadratic equations by factorisation (F to cover in Y11)</p> <p>Solve quadratic inequalities in one variable</p> <p><u>Simultaneous Equations</u></p> <p>Understand that equations can have more than one solution</p> <p>Determine whether a given (x, y) is a solution to a pair of linear simultaneous equations</p> <p>Solve a pair of linear simultaneous equations by substituting a known variable</p> <p>Solve a pair of linear simultaneous equations by using graphs</p> <p>Solve a pair of linear simultaneous equations by subtracting equations</p> <p>Solve a pair of linear simultaneous equations by adding equations</p> <p>Review - Use a given equation to derive related factors</p> <p>Solve a pair of linear simultaneous equations by adjusting one equation</p> <p>Solve a pair of linear simultaneous equations by adjusting both equations</p> <p>Form a pair of linear simultaneous equations from given information</p> <p>Determine whether a given (x, y) is a solution to both a linear and quadratic equation</p> <p>Solve a pair of simultaneous</p>	<p>Solve inequalities</p> <p>Form and solve equations and inequalities in the context of shape</p> <p>Change the subject of a simple formula</p> <p>Change the subject of a known formula</p> <p>Change the subject of a complex formula</p> <p>Change the subject where the subject appears more than once</p> <p>Solve equations by iteration</p> <p><u>Functions</u></p> <p>Use function machines</p> <p>Substitute into expressions and formulae</p> <p>Use function notation</p> <p>Work with composite functions</p> <p>Work with inverse functions</p> <p>Graphs of quadratic functions</p> <p>Solve quadratic inequalities</p> <p>Understand and use trigonometric functions</p>
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	decimals and percentages			<p>equations (one linear, one quadratic) using graphs</p> <p>Solve a pair of simultaneous equations (one linear, one quadratic) algebraically</p> <p>Solve a pair of simultaneous equations involving a third unknown</p>	
Spring 3	<p><u>Solving problems with addition and subtraction</u></p> <p>Properties of addition and subtraction</p> <p>Mental strategies for addition and subtraction</p> <p>Use formal methods for addition of integers</p> <p>Use formal methods for addition of decimals</p> <p>Use formal methods for subtraction of integers</p> <p>Use formal methods for subtraction of decimals</p> <p>Choose the most appropriate method: mental strategies, formal written or calculator</p> <p>Solve problems in the context of perimeter</p> <p>Solve financial maths problems</p> <p>Solve problems involving tables and timetables</p> <p>Solve problems with frequency trees</p> <p>Solve problems with bar charts and line charts</p> <p>Add and subtract numbers given in standard form</p> <p><u>Solving problems with multiplication and division</u></p> <p>Properties of multiplication and division</p> <p>Understand and use factors</p>	<p><u>Brackets, equations and inequalities</u></p> <p>Form algebraic expressions</p> <p>Use directed number with algebra</p> <p>Multiply out a single bracket</p> <p>Factorise into a single bracket</p> <p>Expand multiple single brackets and simplify</p> <p>Expand a pair of binomials</p> <p>Solve equations, including with brackets</p> <p>Form and solve equations with brackets</p> <p>Understand and solve simple inequalities</p> <p>Form and solve inequalities</p> <p>Solve equations and inequalities with unknowns on both sides</p> <p>Form and solve equations and inequalities with unknowns on both sides</p> <p>Identify and use formulae, expressions, identities and equations</p> <p><u>Sequences</u></p> <p>Generate sequences given a rule in words</p> <p>Generate sequences given a simple algebraic rule</p> <p>Generate sequences given a complex algebraic rule</p> <p>Find the rule for the nth term of a linear sequence</p>	<p><u>Numbers</u></p> <p>Integers, real and rational numbers</p> <p>Understand and use surds</p> <p>Work with directed number</p> <p>Solve problems with integers</p> <p>Solve problems with decimals</p> <p>HCF and LCM</p> <p>Adding and subtracting fractions</p> <p>Multiplying and dividing fractions</p> <p>Solve problems with fractions</p> <p>Numbers in standard form</p> <p><u>Using percentages</u></p> <p>Use the equivalence of fractions, decimals and percentages</p> <p>Calculate the percentage increase and decrease</p> <p>Express a change as a percentage</p> <p>Solve reverse percentage problems</p> <p>Recognise and solve percentage problems (non calculator)</p> <p>Recognise and solve percentage problems (calculator)</p> <p>Solve problems with repeated percentage change</p> <p><u>Maths and money</u></p> <p>Solve problems with bills and bank statements</p> <p>Calculate simple interest</p> <p>Calculate compound interest</p> <p>Solve problems with Value Added Tax</p>	<p><u>Angles and Bearings</u></p> <p>Use cardinal directions and related angles</p> <p>Draw and interpret scale diagrams</p> <p>Understand and represent bearings</p> <p>Measure and read bearings</p> <p>Make scale drawings using bearings</p> <p>Calculate bearings using angles rules</p> <p>Solve bearings problems using Pythagoras and trigonometry</p> <p>Solve bearings problems using the sine and cosine rules</p> <p><u>Working with circles</u></p> <p>Review - Recognise and label parts of circle</p> <p>Calculate fractional parts of a circle</p> <p>Calculate the length of an arc</p> <p>Calculate the area of a sector</p> <p>Circle Theorem: Angles at the centre & circumference</p> <p>Circle Theorem: Angles in a semicircle</p> <p>Circle Theorem: Angles in the same segment</p> <p>Circle Theorem: Angles in cyclic quadrilateral</p> <p>Understand and use the volume of a cylinder and cone</p> <p>Understand and use the volume of a sphere</p> <p>Understand and use the surface</p>	<p><u>Multiplicative reasoning</u></p> <p>Use scale factors</p> <p>Understand direct proportion</p> <p>Construct complex direct proportion equations</p> <p>Calculate with pressure and density</p> <p>Understand inverse proportion</p> <p>Construct inverse proportion equations</p> <p>Ratio problems</p> <p><u>Geometric reasoning</u></p> <p>Angles at points</p> <p>Angles in parallel lines and shapes</p> <p>Exterior and interior angles of polygons</p> <p>Proving geometric facts</p> <p>Solve problems involving vectors</p> <p>The first four circle theorems</p> <p>Angle between a radius and a chord</p> <p>Angle between a radius and a tangent</p> <p>Two tangents from a point</p> <p>Alternate segment theorem</p> <p>Pythagoras' theorem and trigonometric ratios</p> <p><u>Algebraic reasoning</u></p> <p>Simplify complex expressions</p> <p>Find the rule for the nth term of a linear sequence</p> <p>Find the rule for the nth term of a</p>

<p>Understand and use multiples</p> <p>Multiply and divide integers and decimals by powers of 10</p> <p>Multiply by 0.1 and 0.01</p> <p>Convert metric units</p> <p>Use formal methods to multiply integers</p> <p>Use formal methods to multiply decimals</p> <p>Use formal methods to divide integers</p> <p>Use formal methods to divide decimals</p> <p>Understand and use order of operations</p> <p>Solve problems using the area of rectangles and parallelograms</p> <p>Solve problems using the area of triangles</p> <p>Solve problems using the area of trapezia</p> <p>Solve problems using the mean</p> <p>Solve problems involving fractions of amounts</p> <p>Solve problems involving percentages of amounts</p> <p>Explore multiplication and division in algebraic expressions</p> <p><u>Fractions and Percentages of Amounts</u></p> <p>Finding a fraction of a given amount</p> <p>Use a given fraction to find the whole and/or other fractions</p> <p>Find a percentage of a given amount using mental methods</p> <p>Find a percentage of a given amount using a calculator</p> <p>Solve problems with fractions greater than 1 and percentages greater than 100%</p>	<p><u>Indices</u></p> <p>Adding and subtracting expressions with indices</p> <p>Simplifying algebraic expressions by multiplying indices</p> <p>Simplifying algebraic expressions by dividing indices</p> <p>Using the addition law for indices</p> <p>Using the addition and subtraction law for indices</p> <p>Exploring powers of powers</p>	<p>Calculate wages and taxes</p> <p>Solve problems with exchange rates</p> <p>Solve unit pricing problems</p>	<p>area of a sphere</p> <p>Understand and use the surface area of a sphere</p> <p>Solve area and volume problems involving similar shapes</p> <p><u>Vectors</u></p> <p>Understand and represent vectors</p> <p>Use and read vector notation</p> <p>Draw and understand vectors multiplied by a scale</p> <p>Draw and understand addition of vectors</p> <p>Draw and understand addition and subtraction of vectors</p> <p>Explore a vector journeys in shapes</p> <p>Explore a quadrilaterals using vectors</p> <p>Understand parallel vectors</p> <p>Explore collinear points using vectors</p> <p>Use vectors to construct geometric arguments and proofs</p>	<p>quadratic sequence</p> <p>Use rules for sequences</p> <p>Solve linear simultaneous equations graphically</p> <p>Solve simultaneous equations with one quadratic graphically</p> <p>Formal algebraic proof</p> <p>Inequalities in two variables</p>
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<p>Spring 4</p>	<p><u>Fractions and Percentages of Amounts</u> Finding a fraction of a given amount Use a given fraction to find the whole and/or other fractions Find a percentage of a given amount using mental methods Find a percentage of a given amount using a calculator Solve problems with fractions greater than 1 and percentages greater than 100%</p> <p><u>Operations and equations with directed number</u> Understand and use representations of directed numbers Order directed numbers using lines and appropriate symbols Perform calculations that cross zero Adding directed numbers Subtracting directed numbers Multiplication of directed numbers Multiplication and division of directed numbers Using a calculator for directed number calculations Evaluating algebraic expressions with directed number Introduction to two-step equations Solving two-step equations Use order of operations with directed numbers Understand that positive numbers have more than one square root Explore higher powers and roots</p> <p><u>Addition and subtraction of fractions</u> Understand representations of</p>	<p><u>Fractions and Percentages</u> Convert fluently between key fractions, decimals and percentages Calculate key fractions, decimals and percentages of an amount without a calculator Calculate fractions, decimals and percentages of an amount using calculator methods Convert between decimals and percentages greater than 100% Percentage decrease with a multiplier Calculate percentage increase and decrease using a multiplier Express one number as a fraction or a percentage of another without a calculator Express one number as a fraction or a percentage of another using calculator Work with percentage change Choose appropriate methods to solve percentage problems Find the original amount given the percentage less than 100% Find the original amount given the percentage greater than 100% Choose appropriate methods to solve complex percentage problems</p> <p><u>Standard index form</u> Investigating positive powers of 10 Work with numbers greater than 1 in standard form Investigate negative powers of 10 Work with numbers between 0 and 1 in standard form Compare and order numbers in standard form Mentally calculate with numbers in</p>	<p><u>Deduction</u> Angles in parallel lines Solving angle problems (using chains of reasoning) Angles problems with algebra Conjectures with angles Conjectures with shapes Link constructions and geometric reasoning</p> <p><u>Rotation and translation</u> Identify the order of rotational symmetry of a shape Compare and contrast rotational symmetry with lines of symmetry Rotate a shape about a point on the shape Rotate a shape about a point not on a shape Translate points or shapes by a given vector Compare rotation and reflection of shapes Find the result of a series of translations</p> <p><u>Pythagoras theorem</u> Square and square roots Identify the hypotenuse of a right angled triangle Determine whether a triangle is right angled Calculate the hypotenuse of a right angled triangle Calculate the missing sides in a right angled triangles Use pythagoras theorem on a coordinate axis Explore proofs of pythagoras theorem Use pythagoras theorem in 3D shapes</p>	<p><u>Ratios & Fractions</u> Compare quantities using a ratio Link ratios and fractions Share in a ratio (given total or one part) Use ratios and fractions to make comparisons Link ratios and graphs Solve problems with currency conversion Link ratios and scales Use and interpret ratios of the form 1:n and n:1 Solve 'best buy' problems Combine a set of ratios Link ratio and algebra Ratio in area problems Ratio in volume problems Mixed ratio problems</p> <p><u>Percentages & Interest</u> Convert and compare fractions, decimals and percentages Work out percentages of amounts (with and without a calculator) Increase and decrease by a given percentage Express one number as a percentage of another Calculate simple and compound interest Repeated percentage change Find the original value after a percentage change Solve problems involving growth and decay Understand iterative processes Solve problems involving percentages, ratios and fractions</p> <p><u>Probability</u></p>	<p><u>Transforming and constructing</u> Perform and describe line symmetry and reflection Perform and describe rotation/rotational symmetry Perform and describe translations of shapes Perform and describe enlargements of shapes Perform and describe negative enlargements of shapes Identify transformations of shapes Perform and describe a series of transformations of shapes Identify invariant points and lines Perform standard constructions using ruler and protractor or ruler and compasses Solve loci problems Understand and use trigonometric graphs Sketch and identify translations of the graph of a given function Sketch and identify reflections of the graph of a given function</p> <p><u>Listing & describing</u> Work with organised lists Use the product rule for counting Sample spaces and probability Complete and use Venn diagrams Construct and interpret plans and elevations Use data to compare distributions Interpreting scatter diagrams</p> <p><u>Show that...</u> "Show that" with number "Show that" with algebra "Show that" with shape "Show that" with angles</p>
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	<p>fractions</p> <p>Convert between mixed numbers and fractions</p> <p>Add and subtract unit fractions with the same denominator</p> <p>Add and subtract fractions with the same denominator</p> <p>Add and subtract fractions from integers expressing the answer as a single fraction</p> <p>Understand and use equivalent fractions</p> <p>Add and subtract fractions where the denominators share a simple common multiple</p> <p>Add and subtract fractions with any denominator</p> <p>Add and subtract improper fractions and mixed numbers</p> <p>Use fractions in algebraic contexts</p> <p>Use equivalence to add and subtract decimals and fractions</p> <p>Add and subtract simple algebraic fractions</p>	<p>standard form</p> <p>Add and subtract numbers in standard form</p> <p>Multiply and divide numbers in standard form</p> <p>Use a calculator to work with numbers in standard form</p> <p>Understand and use negative indices</p> <p>Understand and use fractional indices</p> <p><u>Number sense</u></p> <p>Round numbers to powers of 10 and 1 significant figure</p> <p>Round numbers to a given number of decimal places</p> <p>Estimate the answer to a calculation</p> <p>Understand and use error interval notation</p> <p>Calculate using the order of operations</p> <p>Calculate with money</p> <p>Convert metric measures of length</p> <p>Convert metric units of weights and capacity</p> <p>Convert metric units of area</p> <p>Convert metric units of volume</p> <p>Solve problems involving time and the calendar</p>		<p>Know how to add, subtract and multiply fractions</p> <p>Find probabilities using equally likely outcomes</p> <p>Use the property that probabilities sum to 1</p> <p>Using experimental data to estimate probabilities</p> <p>Find probabilities from tables, Venn diagrams and frequency trees</p> <p>Review - Construct and interpret sample spaces for more than one event</p> <p>Calculate probability with independent events</p> <p>Use tree diagrams for independent events</p> <p>User tree diagrams for dependent events</p> <p>Construct and interpret conditional probabilities (Tree diagrams)</p> <p>Construct and interpret conditional probabilities (Venn diagrams and two-way tables)</p>	<p>"Show that" with data</p> <p>"Show that" with congruent triangles</p> <p>Formal proof with congruent triangles</p>
<p>Summer 5</p>	<p><u>Construction and measuring</u></p> <p>Understand and use the letter and labelling conventions including those for geometric figures</p> <p>Draw and measure line segments including geometric figures</p> <p>Understand angles as a measure of turn</p> <p>Classify angles</p> <p>Measure angles up to 180°</p>	<p><u>Angles in parallel lines and polygons</u></p> <p>Understand and use basic angle rules and notation</p> <p>Investigate angles between parallel lines and the transversal</p> <p>Identify and calculate with alternate and corresponding angles</p> <p>Identify and calculate with co-interior, alternate and corresponding angles</p>	<p><u>Enlargement and similarity</u></p> <p>Recognise enlargement and similarity</p> <p>Enlarge a shape by a positive integer scale factor</p> <p>Enlarge a shape by a positive integer scale factor from a point</p> <p>Enlarge a shape by a positive fractional scale factor</p> <p>Enlarge by a negative scale factor</p> <p>Work out missing sides and angles</p>	<p><u>Collecting, Representing and Interpreting Data</u></p> <p>Understanding populations and samples</p> <p>Construct a stratified sample</p> <p>Primary and secondary data</p> <p>Construct and interpret frequency tables and frequency polygons</p> <p>Construct and interpret two-way tables</p> <p>Construct and interpret line and</p>	

<p>Draw angles up to 180° Draw and measure angles between 180° and 360° Identify perpendicular and parallel lines Recognise types of triangle Recognise types of quadrilateral Identify polygons up to a decagon Construct triangles using SSS, SAS and ASA Construct more complex polygons Interpret simple pie charts using proportion Interpret pie charts using a protractor Draw pie charts</p> <p><u>Geometric reasoning</u> Understand and use the sum of angles at a point Understand and use the sum of angles on a straight line Understand and use the equality of vertically opposite angles Know and apply the sum of angles in a triangle Know and apply the sum of angles in a quadrilateral Solve angle problems using properties of triangles and quadrilaterals Solve complex angle problems Find and use the sum of any angle polygon Investigate angles in parallel lines Understand and use parallel line angle rules Use known facts to obtain simple proofs</p>	<p>Solve complex problems with parallel line angles Construct triangles and special quadrilaterals Investigate the properties of special quadrilaterals Identify and calculate with sides and angles in special quadrilaterals Understand and use the properties of diagonals of quadrilaterals Understand and use the sum of exterior angles of any polygon Calculate and use the sum of the interior angles in any polygon Calculate missing interior angles in regular polygons Prove simple geometric facts Construct an angle bisector Construct a perpendicular bisector of a line segment</p> <p><u>Area of Trapezia & Circles</u> Calculate the area of the triangles, rectangles and parallelograms Calculate the area of a trapezium Calculate the perimeter and area of compound shapes Investigate the area of a circle Calculate the area of a circle and parts of a circle without a calculator Calculate the area of a circle and parts of a circle with a calculator Calculate the perimeter and area of compound shapes</p> <p><u>Line symmetry and reflection</u> Recognise line symmetry Reflect a shape in a horizontal or vertical line 1 (shapes touching the line) Reflect a shape in a horizontal or vertical line 2 (shapes not touching</p>	<p>in a pair of given similar shapes Solve problems with similar triangles Explore ratios in right angles triangles</p> <p><u>Solving ratio and proportion problems</u> Solve problems with direct proportion Direct proportion and conversion graphs Solve problems with inverse proportion Graphs of inverse relationships Solve ratio problems given the whole or part Solve 'best buy' problems Solve problems ratio and algebra</p> <p><u>Rates</u> Solve speed, distance and time problems without a calculator Solve speed, distance and time problems with a calculator Use distance-time graphs Solve problems with density, mass and volume Solve flow problems and their graphs Rates of change and their units Convert compound units</p>	<p>bar charts (including composite bar charts) Construct and interpret pie charts Criticise charts and graphs Construct histograms Interpret histograms Find and interpret averages from a list Find and interpret averages from a table Construct and interpret time series graphs Construct and interpret stem-and-leaf diagrams Construct and interpret cumulative frequency diagrams Use cumulative frequency diagrams to find measures Construct and interpret box plots Compare distributions using charts and measures Compare distributions using complex charts and measures Review - Construct and interpret scatter graphs Draw and use a line of best fit Understand extrapolation</p> <p><u>Non-calculator methods</u> Mental/written methods of integer/decimal addition and subtraction Mental/written methods of integer/decimal multiplication and division The four rules of fraction arithmetic Exact answers Rational and irrational numbers Understand and use surds Calculate with surds Rounding to decimal places and</p>	
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		<p>the line)</p> <p>Reflect a shape in a diagonal line 1 (shapes touching the line)</p> <p>Reflect a shape in a diagonal line 2 (shapes not touching the line)</p>		<p>significant figures</p> <p>Estimating answers to calculations</p> <p>Understand and use limits of accuracy</p> <p>Upper and lower bounds</p> <p>Use number sense</p> <p>Solve financial maths problems</p> <p>Break down and solve multi-step problems</p>	
Summer 6	<p><u>Developing number sense</u></p> <p>Know and use mental addition and subtraction strategies for integers</p> <p>Know and use mental multiplication and division strategies for integers</p> <p>Know and use mental arithmetic strategies for decimals</p> <p>Know and use mental arithmetic strategies for fractions</p> <p>Use factors to simplify calculations</p> <p>Use estimation as a method for checking mental calculations</p> <p>Use known number facts to derive other facts</p> <p>Use known algebraic facts to derive other facts</p> <p>Know when to use a mental strategy, formal written method or a calculator</p> <p><u>Sets and probability</u></p> <p>Identify and represent sets</p> <p>Interpret and create Venn diagrams</p> <p>Understand and use the intersection of sets</p> <p>Understand and use the union of sets</p> <p>Understand and use the complement of a set</p> <p>Know and use the vocabulary of</p>	<p><u>The data handling cycle</u></p> <p>Set up a statistical enquiry</p> <p>Design and criticise questionnaires</p> <p>Draw and interpret pictograms, bar charts and vertical line charts</p> <p>Draw and interpret multiple bar charts</p> <p>Draw and interpret pie charts</p> <p>Draw and interpret line graphs</p> <p>Choose the most appropriate diagram for given set of data</p> <p>Represent and interpret grouped quantitative data</p> <p>Find and interpret the range</p> <p>Compare distributions using charts</p> <p>Identify misleading graphs</p> <p><u>Measures of location</u></p> <p>Understand and use the mean, median and mode</p> <p>Choose the most appropriate average</p> <p>Find the mean from an ungrouped frequency table</p> <p>Find the mean from a grouped frequency tables</p> <p>Identify outliers</p> <p>Compare distributions using averages and the range</p>	<p><u>Probability</u></p> <p>Single event probability</p> <p>Relative frequency</p> <p>Expected outcomes</p> <p>Independent events</p> <p>Use tree diagrams</p> <p>Use tree diagrams to solve 'without replacement' problems</p> <p>Use diagrams to work out probabilities</p> <p><u>Algebraic representation</u></p> <p>Draw and interpret quadratic graphs</p> <p>Interpret other graphs including reciprocal and piece-wise</p> <p>Investigate graphs of simultaneous equations</p> <p>Represent inequalities</p>	<p><u>Types of Number and sequences</u></p> <p>Understand the difference between factors and multiples</p> <p>Understand primes and express a number as a product of its prime factors</p> <p>Find the HCF and LCM of a set of numbers</p> <p>Describe and continue arithmetic and geometric sequences</p> <p>Explore other sequences</p> <p>Describe and continue sequences involving surds</p> <p>Find the rule for the nth term of a linear sequence</p> <p>Find the rule for the nth term of quadratic sequence</p> <p><u>Indices & Roots</u></p> <p>Square and cube numbers</p> <p>Calculate higher powers and roots</p> <p>Powers of ten and standard form</p> <p>The addition and subtraction rules for indices</p> <p>Understand and use the power zero and negative indices</p> <p>Work with powers of powers</p> <p>Understand and use fractional indices</p> <p>Calculate with numbers in standard form</p>	

<p>probability</p> <p>Generate sample spaces for single events</p> <p>Calculate the probability of a single event</p> <p>Understand and use the probability scale</p> <p>Know that the sum of probabilities of all possible outcomes is 1</p> <p><u>Prime numbers and proof</u></p> <p>Find and use multiples</p> <p>Identify factors of numbers and expressions</p> <p>Recognise and identify prime numbers</p> <p>Recognise square and triangular numbers</p> <p>Find common factors of a set of numbers including the HCF</p> <p>Find common multiples of a set of numbers including the LCM</p> <p>Write a number as the product of its prime factors</p> <p>Use a Venn Diagram to calculate the HCF and LCM</p> <p>Make and test conjectures</p> <p>Use counterexamples to disprove a conjecture</p>			<p><u>Manipulating Expressions</u></p> <p>Simplify algebraic expressions</p> <p>Use identities</p> <p>Add and subtract simple algebraic fractions</p> <p>Add and subtract complex algebraic fractions</p> <p>Multiply and divide simple algebraic fractions</p> <p>Multiply and divide complex algebraic fractions</p> <p>Form and solve equations and inequalities with fractions</p> <p>Solve equations with algebraic fractions</p> <p>Represent numbers algebraically</p> <p>Algebraic arguments and proof</p>	
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