

Curriculum Area: Mathematics

Long-Term Plan

Academic Year 2022 - 2023

	Autumn Term	Spring Term	Summer Term
	<u>Autumn 1</u>	<u>Spring 1</u>	<u>Summer 1</u>
Years 7/8	<u>Number Skills</u> Place value Number operations Decimals and accuracy Directed numbers BIDMAS Money Problems <u>Factors, Multiples, Primes, Powers and Roots</u> Powers and roots Index laws Factors and multiples Prime factor decomposition Highest common factor and lowest common multiple	<u>Perimeter, Area and Volume</u> Squares, rectangles and triangles Trapeziums and parallelograms Perimeter of polygons Area and circumference of circles Compound shapes 3D Shapes Volume and surface area of cubes and cuboids Volume and surface area of prisms Problem solving with perimeter, area and volume <u>Angles</u> Types of Angles Measuring and drawing angles Angle facts Angles in triangles Angles in quadrilaterals Angles in parallel lines	<u>Co-ordinates and Straight Line Graphs</u> Plotting co-ordinates Using a table of values Horizontal and vertical lines Gradient and y-intercept Parallel and perpendicular lines <u>Sequences</u> Term to term rule Finding the nth term Using the nth term Special sequences

	<u>Autumn 2</u>	<u>Spring 2</u>	<u>Summer 2</u>
	<p><u>Fractions, Decimals and Percentages</u> Converting between fractions, decimals and percentages Fraction of an amount Equivalent fractions Operations with fractions Percentage of an amount Percentages on a calculator</p> <p><u>Ratio and Proportion</u> Simplifying ratios Sharing an amount in a ratio Ratios and fractions Maps and scale drawings Converting metric and imperial units Exchange rates Best buys Scaling recipes</p>	<p><u>Averages and Range</u> Calculating averages and the range Averages from tables</p> <p><u>Representing Data</u> Tally charts Bar charts Pictograms Pie charts Stem and leaf diagrams Frequency tables</p>	<p><u>Probability</u> Probability scale Probability of a single event Two way tables Frequency trees Venn diagrams Experimental probability Multiple events Probability trees and sample space diagrams</p> <p><u>Algebra</u> Simplifying expressions Substitution Expanding single brackets Factorising single brackets Solving linear equations Forming expressions and equations</p>

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	<u>Autumn 1</u>	<u>Spring 1</u>	<u>Summer 1</u>
Year 9	<u>Working with integers</u> Basic calculations Order of operations Inverse operations <u>Properties of integers</u> Types of numbers Prime factors Multiples and factors <u>Collecting, interpreting and representing data</u> Populations and samples Tables and graphs ^[SEP] Pie charts Line graphs and time series [H] Cumulative frequency graphs [H] Histograms	<u>Basic Algebra</u> Algebraic notation Simplifying expressions Substitution ^[SEP] Expanding brackets Factorising expressions Solving problems using algebra <u>Properties of polygons and 3D objects</u> Types of shapes Symmetry Triangles ^[SEP] Quadrilaterals Properties of 3D objects <u>Angles</u> Angle facts ^[SEP] Parallel lines and angles Angles in triangles Angles in polygons	<u>Rounding and estimating</u> Approximate values Approximation and estimation Limits of accuracy <u>Percentages</u> Review of percentages Percentage calculations Percentage change <u>Powers and roots</u> Index notation ^[SEP] The laws of indices Working with powers and roots

	<u>Autumn 2</u>	<u>Spring 2</u>	<u>Summer 2</u>
	<p><u>Analysing data</u> Averages and range Misleading graphs Scatter diagrams</p> <p><u>Working with fractions</u> Equivalent fractions Using the four operations with fractions Fractions of quantities</p> <p><u>Working with decimals</u> Review of decimals and fractions Calculating with decimals [H] Converting recurring decimals to fractions</p>	<p><u>Perimeter</u> Perimeter of simple and composite shapes Circumference of a circle Problems involving perimeter and circumference</p> <p><u>Area</u> Area of polygons Area of circles and sectors Area of composite shapes</p>	<p><u>Standard form</u> [H] Expressing numbers in standard form [H] Calculators and standard form [H] Working in standard form</p> <p><u>Further algebra</u> Multiplying two binomials Factorising quadratic expressions Forming and solving algebraic expressions [H] Completing the square [H] Algebraic fractions</p>

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	<u>Autumn 1</u>	<u>Spring 1</u>	<u>Summer 1</u>
Year 10	<u>Equations</u> Linear equations Quadratic equations Simultaneous equations Using graphs to solve equations [H] Approximate solutions using iteration [H] Problem solving using graphs <u>Functions and sequences</u> Sequences and patterns Finding the nth term Functions Special sequences [H] Quadratic sequences <u>Surds</u> [H] Approximate and exact values [H] Manipulating surds [H] Working with surds	<u>Formulae</u> Writing formulae Substitution Changing the subject Working with formulae <u>Volume and surface area</u> Prisms and cylinders Cones and spheres Pyramids <u>Further probability</u> Combined events Theoretical probability of combined events [H] Conditional probability	<u>Proportion</u> Direct proportion/unitary method Algebraic and graphical representations Direct proportion/algebraic method Inverse proportion/algebraic method <u>Graphs of linear functions</u> Plotting graphs Gradients and intercepts Parallel lines Working with straight-line graphs <u>Interpreting graphs</u> Graphs of real world contexts Gradients [H] Areas under graphs

	<u>Autumn 2</u>	<u>Spring 2</u>	<u>Summer 2</u>
	<p><u>Basic probability</u> Review of probability concepts The probability scale Calculating probabilities Experimental probability Probability problems</p> <p><u>3D objects</u> 3D objects and their nets Drawing 3D objects Plan and elevation views</p> <p><u>Units and measure</u> Standard units of measurement Compound units of measurement Maps, scale drawings and bearings</p>	<p><u>Inequalities</u> Expressing inequalities Number lines and set notation Solving linear inequalities [H] Solving quadratic inequalities [H] Graphing linear inequalities</p> <p><u>Ratio</u> Introducing ratio Sharing in a given ratio Comparing ratios</p>	<p><u>Circles</u> [H] Review of parts of a circle [H] Circle theorems and proofs [H] Application of circle theorems</p> <p><u>Pythagoras' theorem</u> Understand Pythagoras' theorem Using Pythagoras' theorem Using Pythagoras to solve problems [H] 3D Pythagoras</p> <p><u>Trigonometry</u> Trigonometry in right angled triangles [H] Exact trigonometric values [H] The sine, cosine and area rules [H] Using trigonometry to solve problems</p>

Year 11	Autumn Term	Spring Term	Summer Term
	<u>Autumn 1</u>	<u>Spring 1</u>	<u>Summer 1</u>
	<u>Vector geometry</u> Vector notation Vector representation Vector arithmetic [H] Using vectors in geometric proofs <u>Transformations in a plane</u> Reflections Translations Rotations [H] Combined transformations <u>Constructions and loci</u> Geometrical instruments Ruler and compass constructions Loci Applying these skills	<u>Graphs of other functions and equations</u> Review of linear graphs Quadratic functions Other polynomials and reciprocals [H] Exponential and trigonometric functions [H] Circles and their equations <u>Growth and decay</u> Simple and compound growth Simple and compound decay <u>Transformations of curves</u> [H] Quadratic functions and parabolas [H] Trigonometric functions [H] Cubic and exponential functions [H] Translations and reflections	Revision
<u>Autumn 2</u>	<u>Spring 2</u>	<u>Summer 2</u>	

Similarity

Similar triangles

Enlargements

Similar shapes and objects

Congruence

Congruent triangles

Applying congruency

Revision