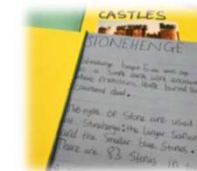




## Curriculum Progress Plan

MATHS Key Stage 4 Year 2018-19



	HALF TERM 1	HALF TERM2	HALF TERM3	HALF TERM 4	HALF TERM 5	HALF TERM 6
Topic Titles	Number 1 Expressions Angles and Polygons	Handling Data 1 Fractions, Decimals and Percentages Formulae and Functions	Working in 2-D Probability Measures and Accuracy Equations and Inequalities	Circles and Construction Ratio and Proportion Factors, Powers and Roots Graphs 1 Working in 3-D	Handling Data 2 Calculations 2 Graphs 2 Pythagoras and Trigonometry Probability - Combined events	Sequences Units and proportionality Bespoke selection of individual catch up and extension
Objectives (The things we want the pupils to make progress in)	<p>N1 Order positive and negative integers and decimals using the symbols <math>=</math>, <math>\neq</math>, <math>&lt;</math>, <math>&gt;</math>, <math>\leq</math>, <math>\geq</math></p> <p>N2 Use place value when calculating with decimals; Add and subtract positive and negative integers and decimals, Multiply and divide positive and negative integers and decimals.</p> <p>N15 Round to a number of decimal places or significant figures</p> <p>H Use BIDMAS to complete calculations in the right order</p> <p>A1 use and interpret algebraic notation</p> <p>A2 substitute numerical values into formulae and expressions</p> <p>A3 understand and use the concepts and vocabulary of expressions, equations, formulae, terms and factors</p> <p>H Multiply a term over a bracket</p> <p>H Take out common factors in an expression</p> <p>H Simplify algebraic fractions and carry out arithmetic operations with algebraic fractions</p> <p>R10 simplify and manipulate</p>	<p>S2 Construct and interpret frequency tables and two-way tables; Construct and interpret pictograms, bar line charts and bar charts; Interpret and construct pie charts and know their appropriate use</p> <p>S4 Compare distributions using median, mean mode and range and identify outliers</p> <p>H Calculate inter-quartile range and use in comparison of data sets</p> <p>H Use frequency tables to represent grouped data</p> <p>H Construct Histograms with equal or unequal class widths</p> <p>N10 Convert between terminating decimals and their corresponding fractions; Compare decimals and fractions using the symbols <math>&gt;</math> and <math>&lt;</math></p> <p>N8 Find fractions and percentages of amounts; Add, subtract, multiply and divide simple fractions and mixed numbers</p> <p>N12 Convert between fractions, decimals and percentages</p> <p>H Convert between fractions, recurring decimals, and percentages</p> <p>H Order fractions, decimals and</p>	<p>G14 Accurately draw and measure lines and angles</p> <p>G15 Use standard units for lengths and areas; Use bearings; Interpret maps and scale drawings</p> <p>G16 Know and apply formulae for areas of triangles, parallelograms and trapeziums</p> <p>H Calculate areas of triangles, parallelograms, trapezia and composite shapes</p> <p>G7 &amp; G24 Identify, describe and construct reflections, rotations, translations and enlargements</p> <p>H Describe and construct enlargements with fractional and negative scale factors</p> <p>H Identify what changes and what is invariant under a combination of transformations</p> <p>P1 Use experimental data to estimate probabilities and expected frequencies</p> <p>P2 Calculate theoretical probabilities and expected frequencies using the idea of equally likely outcomes</p> <p>P3 Compare theoretical probabilities with experimental probabilities</p>	<p>G9 Identify and apply circle definitions, properties and formulae; H find the area and circumference of a circle and composite shapes involving circles</p> <p>H Calculate arc lengths, angles and areas of sectors</p> <p>H Prove and apply the circle theorems</p> <p>G2 Construct triangles; Use the standard ruler and compass constructions; Solve loci problems</p> <p>R8 Use Fractions and percentages to describe a proportion</p> <p>R4 Write ratio in its simplest form</p> <p>R9 Solve problems involving percentage change</p> <p>H Divide in a given ratio</p> <p>H Calculate percentage increases or decreases using multiplication</p> <p>H Reverse a percentage change to find the original value</p> <p>N4 Use Venn diagrams or factor trees to systematically list the prime factors of a number</p> <p>N5 Use prime factor decomposition to find HCF and LCM of two or more numbers</p>	<p>S2 Interpret and construct tables, graphs and charts for discrete, continuous and grouped data</p> <p>S4 Use the median, mean, modal class and range to interpret and compare distributions</p> <p>S6 Use correlation to describe scatter graphs but know it does not imply causation; Draw estimated lines of best fit and make predictions but understand their limitations</p> <p>H Interpret and construct line graphs for time series.</p> <p>H Calculate summary statistics from a grouped frequency table</p> <p>H Construct and interpret cumulative frequency curves and box plots</p> <p>N7 Calculate with Integer Indices</p> <p>N8 Calculate exactly with fractions and multiples of <math>\pi</math></p> <p>H Perform exact calculations involving surds</p> <p>N9 Calculate with and interpret numbers written in standard form</p> <p>A11 Draw graphs of quadratic functions; Solve quadratic equations using graphs</p> <p>A12 Recognise, sketch and interpret</p>	<p>A23 Find terms of a linear sequence using term-to-term or position to term rules</p> <p>A24 Recognise special sequences</p> <p>R11 Calculate with standard and compound units</p> <p>H Compare lengths, areas and volumes of similar shapes</p> <p>R10 Solve direct and inverse proportion problems</p> <p>R16 Set up, solve and interpret growth and decay problems</p> <p>H Describe direct and inverse proportion relationships using an equation</p> <p>H Recognise graphs showing direct and inverse proportion and interpret the gradient of a straight line graph</p> <p>H Find the instantaneous and average rate of change of a graph</p> <p>H Solve repeated proportional change problems</p>

Stage 5 GCSE 7-9	<p>Assuming the objectives for stage 4 have been met extension objectives are:-</p> <p>H Use BIDMAS to complete calculations in the right order</p> <p>H Multiply a term over a bracket</p> <p>H Take out common factors in an expression</p> <p>H Simplify algebraic fractions and carry out arithmetic operations with algebraic fractions</p> <p>H Identify congruent shapes and use congruence to prove geometric results</p> <p>H Identify similar shapes and use similarity to find lengths and areas</p> <p>H Use bearings to specify directions</p>	<p>Assuming the objectives for stage 4 have been met extension objectives are:-</p> <p>H Calculate inter-quartile range and use in comparison of data sets</p> <p>H Use frequency tables to represent grouped data</p> <p>H Construct Histograms with equal or unequal class widths</p> <p>H Convert between fractions, recurring decimals, and percentages</p> <p>H Order fractions, decimals and percentages</p> <p>H Rearrange formulae to change the subject</p> <p>H Write an equation to represent a function and find inputs and outputs</p> <p>H Find the inverse of a function and construct and use composite functions</p> <p>H Construct proofs of simple statements using algebra</p> <p>H Expand and factorise quadratics</p>	<p>Assuming the objectives for stage 4 have been met extension objectives are:-</p> <p>H Calculate areas of triangles, parallelograms, trapezia and composite shapes</p> <p>H Describe and construct enlargements with fractional and negative scale factors</p> <p>H Identify what changes and what is invariant under a combination of transformations</p> <p>H Solve problems involving speed and density</p> <p>H Work out upper and lower bounds for a value that has been rounded</p> <p>H Use iterative processes to find approximate solutions to equations</p> <p>H Solve quadratic equations using factorisation, completing the square and the quadratic equation formula</p> <p>H Solve linear inequalities in 2 variables and show the answer on a graph</p>	<p>Assuming the objectives for stage 4 have been met extension objectives are:-</p> <p>H Find the area and circumference of a circle and composite shapes involving circles</p> <p>H Calculate arc lengths, angles and areas of sectors</p> <p>H Prove and apply the circle theorems</p> <p>H Divide in a given ratio</p> <p>H Calculate percentage increases or decreases using multiplication</p> <p>H Reverse a percentage change to find the original value</p> <p>H Simplify expressions involving Surds including rationalising fractions</p> <p>H Draw line graphs and quadratic curves</p> <p>H Identify roots, intercepts and turning points of quadratic curves using graphical and algebraic methods</p> <p>H Calculate the surface area and volume of spheres, pyramids, cones and composite shapes</p> <p>H Know and apply the relationship between length, areas and volumes</p>	<p>Assuming the objectives for stage 4 have been met extension objectives are:-</p> <p>H Interpret and construct line graphs for time series.</p> <p>H Calculate summary statistics from a grouped frequency table</p> <p>H Construct and interpret cumulative frequency curves and box plots</p> <p>H Perform exact calculations involving surds</p> <p>H Recognise, sketch and interpret graphs of exponential functions</p> <p>H Recognise, sketch and interpret graphs of trigonometric functions</p> <p>H Recognise, sketch translations and reflections of graphs</p> <p>H Approximate the gradient of a curve at a given point and the area under a graph. Interpret these values in real life problems including kinematic graphs</p> <p>H Recognise and use simple(!) equations of circles and find the tangent to a circle at a point</p> <p>H Know or find the exact values of sin and cos for key angles</p> <p>H Use sine and cosine rules to find</p>	<p>Assuming the objectives for stage 4 have been met extension objectives are:-</p> <p>H Compare lengths, areas and volumes of similar shapes</p> <p>H Describe direct and inverse proportion relationships using an equation</p> <p>H Recognise graphs showing direct and inverse proportion and interpret the gradient of a straight line graph</p> <p>H Find the instantaneous and average rate of change of a graph</p> <p>H Solve repeated proportional change problems</p>
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Stage 4 GCSE 5-6	N1 Order positive and negative integers and decimals using the symbols $=, \neq, <, >, \leq, \geq$ N2 Use place value when calculating with decimals; Add and subtract positive and negative integers and decimals, Multiply and divide positive and negative integers and decimals. N15 Round to a number of decimal places or significant figures A1 use and interpret algebraic notation A2 substitute numerical values into formulae and expressions A3 understand and use the concepts and vocabulary of expressions, equations, formulae, terms and factors R10 simplify and manipulate algebraic expressions including the laws of indices G3 apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles; understand and use alternate and corresponding angles on parallel lines G4 Derive and use the sum of angles	S2 Construct and interpret frequency tables and two-way tables; Construct and interpret pictograms, bar line charts and bar charts; Interpret and construct pie charts and know their appropriate use S4 Compare distributions using median, mean mode and range and identify outliers N10 Convert between terminating decimals and their corresponding fractions; Compare decimals and fractions using the symbols $>$ and $<$ N8 Find fractions and percentages of amounts; Add, subtract, multiply and divide simple fractions and mixed numbers N12 Convert between fractions, decimals and percentages A2 Substitute numerical values into formulae and expressions A3 Identify inequalities, equations, formulae and identities A4 Expand double brackets; Factorise quadratics of the form $x^2 + bx + c$	G14 Accurately draw and measure lines and angles G15 Use standard units for lengths and areas; Use bearings; Interpret maps and scale drawings G16 Know and apply formulae for areas of triangles, parallelograms and trapeziums G7 & G24 Identify, describe and construct reflections, rotations, translations and enlargements P1 Use experimental data to estimate probabilities and expected frequencies P2 Calculate theoretical probabilities and expected frequencies using the idea of equally likely outcomes P3 Compare theoretical probabilities with experimental probabilities P4 Recognise mutually exclusive events and exhaustive events and know that the probability of mutually exclusive events sum to 1 N15 Round numbers and measures to an appropriate degree of accuracy N14 Use approximation to make estimates; Check calculations using approximation and estimation	G9 Identify and apply circle definitions, properties and formulae; G2 Construct triangles; Use the standard ruler and compass constructions; Solve loci problems R8 Use Fractions and percentages to describe a proportion R4 Write ratio in its simplest form R9 Solve problems involving percentage change N4 Use Venn diagrams or factor trees to systematically list the prime factors of a number N5 Use prime factor decomposition to find HCF and LCM of two or more numbers N6 Write the HCF and LCM using product notation; Calculate positive integer powers and their roots; Recognise powers of 2, 3, 4, and 5 A8 Work with co-ordinates in all four quadrants A9 Plot straight line graphs; EXTN: use the form $y=mx+c$ to identify parallel lines; find the equation of the line through two given points, or through one point with a given gradient	S2 Interpret and construct tables, graphs and charts for discrete, continuous and grouped data S4 Use the median, mean, modal class and range to interpret and compare distributions S6 Use correlation to describe scatter graphs but know it does not imply causation; Draw estimated lines of best fit and make predictions but understand their limitations Interpret and construct line graphs for time series. N7 Calculate with Integer Indices N8 Calculate exactly with fractions and multiples of $\pi$ N9 Calculate with and interpret numbers written in standard form A11 Draw graphs of quadratic functions; Solve quadratic equations using graphs A12 Recognise, sketch and interpret graphs of linear, quadratic, cubic and reciprocal functions A14 Plot and interpret real-life graphs G20 Use the formula for Pythagoras Theorem; Use the trigonometric	A23 Find terms of a linear sequence using term-to-term or position to term rules A24 Recognise special sequences R11 Calculate with standard and compound units R10 Solve direct and inverse proportion problems R16 Set up, solve and interpret growth and decay problems

<p>Stage 3 GCSE 3-4</p>	<p>N1 Order positive and negative integers and decimals using the symbols <math>=</math>, <math>\neq</math>, <math>&lt;</math>, <math>&gt;</math>, <math>\leq</math>, <math>\geq</math> N2 Use place value when calculating with decimals; Add and subtract positive and negative integers and decimals, Multiply and divide positive and negative integers and decimals. N15 Round to a number of decimal places or significant figures A1 use and interpret algebraic notation A2 substitute numerical values into formulae and expressions A3 understand and use the concepts and vocabulary of expressions, equations, formulae, terms and factors R10 simplify and manipulate algebraic expressions including the laws of indices G3 apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles; G4 Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon</p>	<p>S2 Construct and interpret frequency tables and two-way tables; Construct and interpret pictograms, bar line charts and bar charts; Interpret and construct pie charts and know their appropriate use S4 Compare distributions using median, mean mode and range N10 Convert between terminating decimals and their corresponding fractions N8 Find fractions and percentages of amounts; Add, subtract, multiply and divide simple fractions N12 Convert between fractions, decimals and percentages A2 Substitute numerical values into formulae and expressions A3 Identify inequalities, equations, formulae and identities A4 Expand double brackets;</p>	<p>G14 Accurately draw and measure lines and angles G15 Use standard units for lengths and areas; Use bearings; Interpret maps and scale drawings G16 Know and apply formulae for areas of triangles, parallelograms G7 &amp; G24 Identify, describe and construct reflections, rotations, translations and enlargements P1 Use experimental data to estimate probabilities P2 Calculate theoretical probabilities and expected frequencies using the idea of equally likely outcomes P3 Compare theoretical probabilities with experimental probabilities P4 Recognise mutually exclusive events and know that the probability of mutually exclusive events sum to 1 N15 Round numbers and measures to an appropriate degree of accuracy N14 Use approximation to make estimates; Check calculations using approximation and estimation N13 Use standard units of length, mass, volume, capacity, time and area</p>	<p>G9 Identify and apply circle definitions, properties and formulae; G2 Construct triangles R8 Use Fractions to describe a proportion R4 Write ratio in its simplest form R9 Find percentages of amounts N4 Use factor trees to systematically list the prime factors of a number N5 Use lists of multiples to find LCM of two or more numbers N6 Write the HCF and LCM using product notation; Recognise powers of 2, 3, A8 Work with co-ordinates in all four quadrants A9 Plot straight line graphs; EXTN: use the form <math>y=mx+c</math> to identify parallel lines; A14 plot and interpret graphs, and graphs of non-standard functions in real contexts, to find approximate solutions to problems G12 Identify the number of faces, edges and vertices of 3D shapes; Construct and interpret plans and elevations of 3D shapes G16 Calculate the volume of cuboids,</p>	<p>S2 Interpret and construct tables, graphs and charts for discrete and grouped data S4 Use the median, mean, modal class and range to interpret and compare distributions S6 Use correlation to describe scatter graphs; Draw estimated lines of best fit and make predictions Interpret and construct line graphs for time series. N7 Calculate with Integer Indices N8 Calculate exactly with fractions and multiples of <math>\pi</math> N9 interpret numbers written in standard form A11 Draw graphs of quadratic functions; A14 Plot and interpret real-life graphs G20 Use the formula for Pythagoras Theorem; P6 Construct possibility spaces and use these to calculate probabilities;</p>	<p>A23 Find terms of a linear sequence using term-to-term or position to term rules A24 Recognise special sequences R11 Calculate with standard and compound units R10 Solve direct proportion problems</p>
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<p>Stage 2 GCSE 1-2</p>	<p>N1 Order positive and negative integers and decimals using the symbols =, ≠, &lt;, &gt;, ≤, ≥ N2 Use place value when calculating with decimals; Add and subtract positive and negative integers and decimals, Multiply and divide positive and negative integers N15 Round to nearest 10, 100, 1000 or whole number A1 use and interpret algebraic notation A2 substitute numerical values into formulae and expressions A3 understand and use the concepts and vocabulary of expressions, equations, formulae, terms and factors G3 apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles; G4 Derive and use the sum of angles in a triangle</p>	<p>S2 Construct and interpret frequency tables and two-way tables; Construct and interpret pictograms, bar line charts and bar charts; S4 Compare distributions using median, mode and range N10 Convert a fraction to a decimal with a calculator N8 Find fractions and percentages of amounts; N12 Convert between decimals and percentages A2 Substitute numerical values into formulae and expressions A3 Identify inequalities, equations, formulae and identities</p>	<p>G14 Accurately draw and measure lines and angles G15 Use standard units for lengths and areas; Interpret maps and scale drawings G16 Know and apply formulae for areas of rectangles and triangles, G7 &amp; G24 Identify, describe and construct reflections, rotations, P1 Use experimental data to estimate probabilities P2 Calculate theoretical probabilities using the idea of equally likely outcomes P4 Recognise mutually exclusive events and know that the probability of mutually exclusive events sum to 1 N15 Round numbers and measures to nearest 10, 100, 1000 or whole number N14 Use approximation to make estimates; N13 Use standard units of length, mass, volume, capacity, time and area A17 Set up and solve linear equations A22 Represent linear inequalities on a number line</p>	<p>G9 Identify and apply circle definitions, properties and formulae; G2 Construct triangles R8 Use Fractions to describe a proportion R4 Write ratio in its simplest form R9 Find percentages of amounts N4 Use factor trees to systematically list the prime factors of a number N5 Use lists of multiples to find LCM of two or more numbers N6 Recognise powers of 2, 3, A8 Work with co-ordinates in the first quadrant A9 Plot straight line graphs A14 plot and interpret graphs, and graphs of non-standard functions in real contexts, to find approximate solutions to problems G12 Identify the number of faces, edges and vertices of 3D shapes; G16 Calculate the volume of cuboids,</p>	<p>S2 Interpret and construct tables, graphs and charts for discrete and grouped data S4 Use the median, mean, mode and range to interpret and compare distributions S6 Use correlation to describe scatter graphs; N8 Calculate exactly with fractions and multiples of π A14 Interpret real-life graphs G20 Use the formula for Pythagoras Theorem; P6 Construct possibility lists and use these to calculate probabilities;</p>	<p>A23 Find terms of a linear sequence using term-to-term rules A24 Recognise special sequences R11 Calculate with standard and compound units R10 Share an amount in a ratio</p>
<p>Stage 1 Entry Level</p>	<p>N1 Order positive and negative integers using the symbols =, ≠, &lt;, &gt;, ≤, ≥ N2 Use place value in whole numbers; Add and subtract positive integers, Multiply and divide positive integers. N15 Round to a nearest 10, 100, 1000 A1 begin to use and interpret algebraic notation A2 substitute numerical values into formulae G3 learn the properties of angles at a point, angles at a point on a straight line, vertically opposite angles;</p>	<p>S2 Construct and interpret frequency tables and two-way tables; Construct and interpret pictograms, bar line charts and bar charts; N10 Convert a fraction to a decimal with a calculator N8 Find fractions of amounts; A2 Substitute numerical values into formulae</p>	<p>G14 Accurately draw and measure lines and angles G15 Use standard units for lengths and areas; G16 Know and apply formulae for areas and perimeters of rectangles G7 Recognise line and rotational symmetry, P1 Use experimental data to estimate probabilities N15 Round numbers and measures to nearest 10, 100, 1000 N14 Use approximation to make estimates; N13 Use standard units of length, mass, volume, capacity, time and area</p>	<p>G9 Identify and apply circle definitions; G2 Construct triangles R8 Use Fractions to describe a proportion R4 Write ratio in its simplest form R9 Find percentages of amounts N4 Use factor trees to systematically list the factors of a number N6 Recognise powers of 2, 3, A8 Work with co-ordinates in the first quadrant  A14 interpret graphs, in real contexts, to find approximate solutions to problems eg currency conversion G12 Identify the number of faces, edges and vertices of 3D shapes; G16 Calculate the volume of cuboids,</p>	<p>S2 Interpret and construct tables, graphs and charts for discrete data S4 Use the median, mode and range to interpret distributions N8 Calculate exactly with whole numbers A14 interpret real-life graphs (eg for conversion) P6 List possibilities and use these to calculate probabilities;</p>	<p>A23 Find terms of a linear sequence using term-to-term rules A24 Recognise special sequences R11 Calculate with standard and compound units R10 Share an amount in a ratio</p>