Maths

Key Stage 2 Curriculum includes
Number: negative numbers, rounding, fractions, percentages, multiples, factors and primes, basic ratio, conversions
Algebra: Use simple formula, generate a linear number sequence, simple equations
Shape: Area of triangles, rectangles and parallelograms, volume of cubes and cuboids, 2d and 3d shapes, name parts of circles, angles (triangle, on a straight line, around a point, vertically opposite).
Date : Averages from a list, bar charts, line graphs, pie charts, plotting coordinates

	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
Autumn 1	**Basic skills** - Arithmetic - Fractions - Negatives - Decimals **Manipulating Algebra and solving equations** - Substitution involving fractions and decimals - Collect like terms - Factorise complex expressions involving multiple letters and powers - Write algebraic expressions including brackets and powers	**Inequalities and review of equations** - Review equations from last year including forming and solving with angles and ratio - Rearrange formula where the unknown appears twice - Solve simple quadratic equations - Solve simultaneous equations - Inequality notation - Inequalities on a number line - Solve 2 sided inequalities - Form and solve inequalities	**Manipulating Algebra** - Revise previous learning - factorise quadratics including the difference of 2 squares - Complete the square – no coefficient of x^2 - simplify algebraic fractions - basic poof - functions **Arithmetic Ratio and Proportion** - Revise last year	**Manipulating Algebra** - Revise last year - Iteration - Complex proof - Further functions - Factorise quadratics with a coefficient of x^2 - Complete the square with a coefficient of x^2 - Make links between algebraic forms of an expression and graphs - Hard algebraic manipulation - Hard algebraic proof **Arithmetic Ratio and Proportion** - Revise last year	**Bespoke package of learning revisiting areas of weakness highlighted through question level analysis from Pre-Public Examinations**	**Algebraic manipulation, surds and indices, quadratic equations and simultaneous equations** **Graphs, linear and quadratic inequalities** **Straight lines and circles** **Differentiation**	**Trigonometry and circular measure** **Further Sequences and series** **Further differentiation** **Numerical methods**

	- Expand double brackets - expand polynomials - Factorise simple quadratics with no coefficient of x^2 - Equations with brackets and where the unknown appears twice. - Equations with fractions - Rearrange simple formula - Solve equations with y^2 (e.g. $3y^2 = 27$) -	from worded scenarios	- Multiply and divide decimals - Complex ratio and proportion questions - Direct and inverse proportion formal method	- 2 step direct and inverse proportion (exam questions) - Direct and inverse proportion graphs			
Autumn 2	**Continue Manipulating Algebra and solving equations** -	**Fractions Decimals and Percentages** - Order fractions decimals and percentages - Problem solving with fractions decimals and percentages - Add, subtract,	**Area, Perimeter Volume** - Revise previous learning - Find the volume and surface area of 3d shapes including cylinders - Volume and	**Area, Perimeter Volume** - Revise last year - Area of a triangle using ½ ab sinC - Arc, segments and sectors (problems using the sine rule) - 3d Pythagoras		**Further Differentiation** **Integration** **Trigonometry** **Binomial Expansion**	**Further Integration** **Partial Fractions** **Numerical methods** **Parametric equations**

		multiply and divide fractions with mixed numbers - Manipulative reasoning - Use a decimal multiplier - Compound interest - Reverse percentages - Percentage change - Simple algebraic fractions	surface area of spheres, cones and pyramids - Problem solving with cones, spheres including working backwards to find a missing dimension - Area and perimeter of segments and sectors including working backwards **Averages, Charts and Graphs** - Revise previous learning - Box plots - Cumulative frequency - Compare data using box plots and cumulative frequency	- Volume of a frustum **Averages, Charts and Graphs** - Revise last year - Draw and interpret histograms - Estimating gradients from Distance time graphs and velocity time graphs - Estimate the area under a curve with velocity time graphs - Equation of a circle		**Introduction to trigonometry**	**Functions and Transformations**
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Spring 1	Averages, Charts and Graphs	Area, Perimeter Volume	Equations	Equations	-	Exponentials and Logs	Differential equations
	- Speed distance time graphs - Pie charts - Calculate average speed - Compare sets of data using average and range - Calculate averages and range from a frequency table - Stem and Leaf diagrams with decimals and 3-digit numbers - Scatter graphs - Frequency diagrams and polygons - Discreet and continuous data	- Recognise and name 2d and 3d shapes - Area of rectangles, triangles, parallelograms and trapeziums - Area and perimeter of compound shapes - Volume of prisms - Area and circumference of circles - Area and perimeter of sectors - Pythagoras - Problem solving (e.g. Tiling an area) - Form and solve equations with shape	- Revise previous learning - Rearrange formula where the unknown appears twice - Solve quadratic equations by factorising - Form and solve quadratic equations from worded scenarios - Name inequalities from graphs to give a feasible region. **Fractions Decimals and Percentages** - Revise previous learning - Convert recurring decimals to fractions - Complex algebraic fractions	- Revise last year - Solve quadratic equations using the formula and problem solving with this - Solve quadratic inequalities - Solve quadratic simultaneous equations **Fractions Decimals and Percentages** - Revise last year - End of paper exam questions and further maths questions related to this topic		**Further Trigonometry** **Proof** **Sampling** **Data representation and interpreting**	**Binomial Theorem** **Kinematics in two dimensions** **Further probability**

Spring 2	Ratio and Proportion	Number Properties	Probability / Angles	Probability / Angles		Probability	Statistical distributions (normal)
	- Write ratios - Simplify ratios - Share in a ratio - Problems with ratio - Problems with ratio, fractions and percentages - Exchange rates - Direct and inverse proportion (worded equations) - Best buy	- Rounding to significant figures - HCF and LCM problems - Product of prime factors - BIDMAS - Upper and lower bounds (simple) - Worded problems with upper and lower bounds - Problem solving with estimates - Venn diagrams and set notation - Standard form - More complex rules of indices	**Probability** - Revise previous - Tree diagrams for dependent events - Complex problems involving ratios - Complex Venn diagram problems - Stratified samples - Capture recapture **Angles** - Revise previous learning - Circle theorems (first 4) - Trigonometry (problem solving) - Complex angles in polygons - More bearings	**Probability** - Revise last year - Combinations - Complex probability exam questions **Angles** - Revise last year - All circle theorems with problem solving - Sine and cosine rule - 3d Trigonometry - Vector geometry - Know exact trig values between 0-360 - Circle theorem proof - Complex vector geometry - Sketch and find		**Probability** **Binomial distribution** **Vectors** **Kinematics in one dimension** **Forces and Newtons Laws**	**Statistical distributions (normal)** **Statistical hypothesis testing (normal)** **Equilibrium and resolving** **Statics and dynamics** **Moments** **3D Vectors**

		-		values from trig graphs			
Summer 1	**Angles** - Draw and measure angles - Notation for parallel and perpendicular sides - Complex problems with angle sums - Form and solve equations with angles - Parallel lines (alternate angles, allied, corresponding) - Properties of quadrilaterals - Bearings - Basic trigonometry - Form and solve equations with angles where there are 2 unknowns - Basic angles in polygons	**Sequences and Graphs** - Fibonacci sequences - Nth term of a linear sequence - Find a given term using the nth term rule - Determine whether a number will appear in a sequence given the nth term rule. - Find the nth term of a nonlinear sequence using a related sequence - Find missing terms in algebraic sequences - Draw horizontal and vertical lines (y=, x=, y=x) - Draw linear graphs from a table of values in the form y =	**Number Properties** - Revise previous learning - Problem solving with indices - Simplify surds - Harder calculations in standard form (+, - X ÷) - Choices and outcomes **Sequences and Graphs** - Revise previous learning - Draw linear graphs using the y-intercept method - Parallel and perpendicular lines - Sketch quadratics - Recognise	**Number Properties** - Revise last year - Add, subtract, multiple and divide surds - Rationalise the denominator - Multiply brackets with surds and simplify - Rationalise the denominator, including using the conjugate - Problem solving with surds - Complex bounds questions **Sequences and Graphs** - Revise last year - Problem solving with parallel and perpendicular lines - Transforming graphs - Sketch quadratics - Recognise reciprocal and exponential		**Statistical hypothesis testing** **Analysis of data using statistical packages** **Forces and Newton's laws** **Revision**	**Revision**

		mx + c (also not in the form y=mx+c) - Find the midpoint of a line segment - Draw nonlinear graphs by finding a table of values	reciprocal and exponential graphs - Solve simultaneous equations graphically	graphs - Sketch trig graphs - Sketch quadratics - Equation of a circle		
Summer 2	**Probability** - Theoretical probability - Relative frequency - Mutually exclusive and independent events - Sample space diagrams - Two-way tables - Frequency trees - Expectation - Venn diagrams - Basic tree diagrams	**Transformations** - Reflect in the lines $y =$, $x =$ $y=x$ and $y=-x$ - Enlarge by a positive or fractional scale factor from a coordinate - Translate a shape by a vector - Rotate a shape from a coordinate - Describe transformations - Identify congruent and similar shapes - Solve problems with similar shapes - Draw to scale and interpret scale drawing and maps - Vector	**Transformations** - Revise previous learning - Solve problems with similar shapes including area and volume scale factors - Determine whether a regular polygon tessellates - Enlarge from a coordinate by a negative scale factor - Constructions - Loci - Vector geometry	**Transformations** - Revise last year - Complex similar shape problems - Complex vector geometry - Graph transformations		**Revision** **Mocks** **Start year 13** **Trigonometry (circular measures)** **Trigonometry (identities)** **Sequences and Series**	

		arithmetic					