Subject	Maths	Year Group	10

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9	Unit 10	Unit 11
Scheme title	**Properties of Number**	**Algebraic Expressions**	**Representing Data**	**Fractions, Decimals & Percentages**	**Equations, Inequalities & Sequences**	**Shapes, Lines & Angles**	**Averages**	**2D & 3D Measures**	**Rates of Change**	**Linear Graphs**	**Transformations**
Purpose of scheme	To revisit and deepen understanding of working with number from topics originally seen in KS3 including calculating with positive and negative integers and decimals; identifying properties of numbers; simplifying expressions involving indices and finding the HCF and LCM of sets of numbers.	To revisit and deepen understanding of algebraic expressions and conventions and to develop greater fluency with algebraic manipulation.	To be able to develop fluency with interpretation and construction of statistical graphs and diagrams.	To be able to convert and calculate with fractions, decimals and percentages. Pupils will then deepen their understanding of working with percentages and develop fluency working with and without a calculator.	To be able to use algebra to form generalised statements of equality and inequality in order to be able to solve problems. Pupils will also revisit linear and non-linear sequences and develop strategies to find missing terms and to find generalised position-to-term rules.	To develop geometrical reasoning skills within the context of basic angle theorems; angles within parallel lines; and interior and exterior angles in polygons.	To consider the limitations of sampling and to be able to make inferences and solve problems when working with averages.	To develop pupils dimensional thinking and ability to solve problems involving 2D and 3D figures. Pupils will derive and understand formulae to calculate the area of 2D shapes and volume of 3D shapes.	To develop pupils understanding of rate as a measure or quantity measured against another and connect this to graphs with real-life context.	To be able to solve geometrical problems on the Cartesian Plane and then make connections between sets of coordinates and generalised algebraic statements. This will extend to working with equations of horizontal, vertical and sloped lines.	To be able to translate, reflect, rotate and enlarge a 2D shape and also to be able to identify how a shape has been transformed.
Knowledge in sequence	- Integers and place value - Decimals - Indices, powers and roots - Factors and multiples	- Algebraic conventions - Manipulating and simplifying expressions	- Tables, charts and graphs - Pie charts - Scatter graphs	- Equivalence of FDP - Calculating with FDP - Percentages	- Equations & Inequalities - Sequences	- Angle facts - Interior and exterior angles in polygons	- Statistics, sampling & averages	- Perimeter - Area - Volume	- Rate - Real-life graphs	- Plotting and interpreting linear graphs	- Translations - Reflections - Rotations - Enlargements
Skills	- Order positive and negative integers and use the appropriate notation - Apply the four operations, including formal written methods to integers and decimals - Understand and use place value - Recognise and use relationships between operations, including inverse operations - Use conventional notation for priority of operations, including brackets, powers, roots and reciprocals - Use positive integer powers and associated real roots - Calculate with roots and with integer indices - Simplify and manipulate algebraic expressions involving the laws of indices - Use the concepts and vocabulary of prime numbers, factors, multiples, HCF, LCM - Write a number as a product of its prime factors	- Use and interpret algebraic notation - Understand and use the concepts and vocabulary of expressions, equations, formulae, inequalities, terms and factors - Substitute numerical values into formulae and expressions, including scientific formulae - Simplify and manipulate algebraic expressions by collecting like terms - Multiply a single term over a bracket - Take out common factors - Argue mathematically to show two expressions are equivalent - Interpret expressions as functions, with inputs and outputs - Translate situations or procedures inton algebraic expressions	- Interpret and construct: * Frequency tables * Bar charts * Pie charts * Pictograms * Vertical Line charts * Line graphs for time series data * Scatter graphs for bivariate data - Recognise correlation - Draw estimated lines of best fit - Make predictions - Interpolate and extrapolate apparent trends whilst knowing the dangers of doing so	- Apply the four operations on fractions (proper, improper and mixed numbers) and decimals - Calculate exactly with fractions - Work interchangeably with terminating decimals and their corresponding fractions - Express one quantity as a fraction of another, where the fraction is less than 1 or greater than 1 - Define percentage as number of parts per hundred - Interpret percentages and percentage changes as a fraction or a decimal, and interpret these multiplicatively - Interpret fractions and percentages as operators - Express one quantity as a percentage of another - Compare two quantities using percentages - Work with percentages greater than 100% - Solve problems involving percentage change, including percentage increase/decrease and original value problems - Solve problems involving simple interest	- Know the difference between an equation and an identity - Solve linear equations in one unknown algebraically (including those with unknowns on both sides of the equation) - Solve linear inequalities in one variable - Represent the solution set on a number line - Generate terms of a sequence from either a term-to-term or a position-to-term rule, including from patterns and diagrams - Recognise and use sequences of triangular, square and cube numbers and simple arithmetic progressions - Recognise and use simple Fibonacci-type sequences, quadratic sequences and simple geometric progressions - Deduce expressions to calculate the nth term of a linear sequence	- Use conventional terms and notations - Use the standard conventions for labelling and referring to the sides and angles of triangles - Draw diagrams from written descriptions - Apply the properties of basic angle theorems - Understand and use alternate and corresponding angles on parallel lines - Derive and apply the properties and definitions of: special types of quadrilaterals and triangles and other plane figures using appropriate language - Derive and use the sum of angles in a triangle to deduce and use the angle sum in any polygon, and to derive properties of regular polygons	- Interpret, analyse and compare the distributions of data sets from univariate empirical distributions through appropriate measures of central tendency (median, mean, mode and modal class) and spread (range, including consideration of outliers) - Apply statistics to describe a population - Infer properties of populations or distributions from a sample, whilst knowing the limitations of sampling	- Know and apply formulae to calculate: area of triangles, parallelograms and trapezia - Know and apply formulae to calculate volumes of cuboids and other right prisms	- Use compound units such as speed and rates of pay - Plot and interpret graphs of non-standard functions in real contexts, to find approximate solutions to problems such as simple kinematic problems involving speed, distance and acceleration - Interpret the gradient of a straight line as a rate of change	- Work with coordinates in all four quadrants - Plot graphs of equations that correspond to straight line graphs - 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 - Identify and interpret gradients and intercepts of linear functions graphically and algebraically - Find approximate solutions using a graph	- Identify, describe and construct congruent and similar shapes, including on coordinate axes, by considering rotation, reflection, translation and enlargement - Enlarge a shape using fractional scale factors
Key words	Place Value, Integer, Round, Factor, Multiple, Prime, Square, Root, Power, Base, Evaluate, Simplify, Decompose, Prime Factor, Product, Total, Sum, Divide, Index,	Expression, Equation, Evaluate, Simplify, Solve, Equivalent, Identity, Expand, Simplify, Linear, Quadratic, Like Terms, Formulae, Rearrange, Substitute, Variable, Coefficient, Constant, Term,	Data, Tabulate, Frequency, Chart, Qualitative, Quantitative, Primary, Secondary, Sample, Estimate, Extrapolate, Correlation, Causation, Proportion	Fraction, Decimal, Percentage, Product, Reciprocal, Equivalent, Simplify, Numerator, Denominator, Convert, Compare, Vinculum, Multiplier, Reverse, Interest,	Equation, Expression, Inequality, Balance, Satisfy, Solve, Variable, Coefficient, Constant, Equality, Represent, Term, Multiply. Linear, Arithmetic, Geometric, Ascending, Descending, Square, Fibonacci	Adjacent, Angle, Allied, Corresponding, Cointerior, Alternate, Parallel, Perpendicular, Interior, Exterior, Transversal, Quadrilateral, Polygon, Regular, Supplementary, Vertex, Irregular	Average, Median, Mode, Mean, Range, Consistancy, Interval, Frequency, Data, Estimate, Sample,	Area, Perimeter, Volume, Perpendicular, Parallel, Property, Dimension, Pyramid, Face, Edge, Polygon, Quadrilateral, Unit, Solid, Surface Area, Vertex, Cross Section	Rate, Constant, Gradient, Graph, Linear, Non linear, Axis, Variable, Piecewise, Constant, Speed, Horizontal	Plot, Linear, Graph, Gradient, Intercept, Axis, Coordinate, Variable, Equation, Substitute, Horizontal, Vertical, Function, Variable, Origin, Quadrant, Midpoint	Transformation, Reflection, Rotation, Enlargement, Congruent, Similar, Scale Factor, Vector, Describe,
End point	Pupils should be fluent and efficient with written calculations. They should be able to use properties of place value to calculate with decimals, and they should be able to consider the hierarchy of operations when calculating. Pupils should be able to identify factors, multiples and primes and be able to use strategies to find the HCF and LCM of pairs of numbers.	Pupils should be able to use a range of pictoral representations to make sense of key algebraic skills such as simplifying, expanding , factorising and susbtitution. They should be able to consider axiomatic thinking when manipulating algebraically by applying distributivity, associativity and commutativity.	Pupils should be able to construct all the necessary charts and graphs and be able to consider common errors when doing this. They should be able to make inferences and draw conclusions from graphical representations.	Pupils should be able to work interchangeably with fractions, decimals and percentages and have a range of methods for conversion and calculation with these. Pupils should have deepened their understanding of percentages to consider calculator specific methods to improve efficiency with percentage change.	Pupils will understand that an equation is a statement of equivalence between two expressions and use the balancing method to be able to solve equations that vary in appearance and structure. Pupils should have extended their work on expressions earlier in the year to finding an expression for the nth term of a linear sequence.	Pupils should be able to calculate missing angles in 2D figures (within polygons and within parallel lines) and be able to provide mathematical reasoning for this.	Pupils should be able to calculate measures of central tendency and the range and be able to solve problems involving these measures. They should be able to compare two samples and draw conclusions using statistical measures.	Pupils should be able to successfully recall formulae and understand where these are derived from. They should be able to use these formulae to solve problems involving area and volume of 2D and 3D figures.	Pupils should be able to connect the features of a graph to real-life contexts, including interpreting the gradient and y-intercept. Pupils should also be able to solve problems involving rate in different contexts, such as with speed, distance and time.	Pupils should be able to solve geometrical problems with coordinates and then be able to connect patterns of coordinates to linear sequences and the algebraic representation of a linear graph.	Pupils should be able to accurately construct 2D shapes that have undergone a transformation. They should also be able to identify what type of transformation may have occurred.
Assessment Methods	Factors Multiples & Primes AQA Topic Test	Algebraic Expressions AQA Topic Test		Fractions, Decimals & Percentages AQA Topic Test	Equations & Inequalities AQA Topic Test	Basic Angles AQA Topic Test	Averages AQA Topic Test	Perimeter and Area AQA Topic Test			
	All content to be assessed in summative termly assessments and Mock Exam in Summer 2										