YEAR 8 SCHEME OF WORK - SECURE

Autumn Term 1	Number	Spring Term 1	Real-life graphs	Summer Term 1	Calculating with fractions
	Area and volume		Decimals and ratio		Straight-line graphs
Half Term: Assessment		**Half Term: Assessment**		**Half Term: Assessment**	
Autumn Term 2	Statistics, graphs and charts	Spring Term 2	Lines and angles	Summer Term 2	Percentages, decimals and fractions
	Expressions and equations				**End of Term Assessment**
End of Term: Assessment		**End of Term: Assessment**		**End of Year: Assessment**	

Year 8 Core Term: Autumn 1	Unit Title: Number	Duration: 11 hrs.
Objectives: • use the concepts and vocabulary of common factors • use the concepts and vocabulary of common multiples • use the concepts and vocabulary of highest common factor • use the concepts and vocabulary of lowest common multiple • use the concepts and vocabulary of prime factorisation • use the four operations, including formal written methods, with positive and negative integers • use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals • use integer powers and associated real roots (square, cube and higher) • recognise powers of 2, 3, 4, 5	**Notes:** • Divide £.p by a two digit number to give £.p • Add and subtract integers – positive and negative numbers (with varying numbers of significant figures) • Find the HCF or LCM of 2 numbers less than 100 • Estimate square roots of non-square numbers less than 100 • Multiply and divide integers - positive and negative numbers • Calculate squares, cubes and cube roots • Add, subtract, multiply and divide integers. Extend to the distributive law $a(b + c)$ • Find the prime factor decomposition of a number • Use the function keys for powers and fractions • Combine laws of arithmetic for brackets with mental calculations of cubes roots and square roots	

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Year 8 Core Term: Autumn 1	Unit Title: Area and volume	Duration: 11 hrs.
Objectives: • derive and apply formulae to calculate and solve problems involving area of triangles, parallelograms, trapezia • derive and apply formulae to calculate and solve problems involving volume of cuboids (including cubes) • calculate and solve problems involving composite shapes • change freely between related standard units [for example time, length, area, volume/capacity, mass]	**Notes:** • Calculate surface areas of cubes and cuboids • Calculate areas of triangles, paralleleograms, trapezia • Calculate areas of compound shapes • Calculate the volume of shapes made from cuboids • Solve volume problems • Convert between metric and imperial measures, and cm^3 and litres. • Calculate the surface area of shapes made from cuboids	

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Year 8 Core Term: Autumn 2	Unit Title: Statistics, graphs and charts	Duration: 12 hrs.
Objectives: • describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete data • describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving continuous and grouped data • describe, interpret and compare observed distributions of a single variable through: appropriate measures of spread (range, consideration of outliers) • describe, interpret and compare observed distributions of a single variable through: appropriate measures of central tendency (mean, mode, median) • construct and interpret frequency tables • construct and interpret bar charts • construct and interpret pie charts • Illustrate simple mathematical relationships between two variables (bivariate data) using scatter graphs	**Notes:** • Calculate the mean from a simple frequency table, and using an assumed mean • Interpret and construct pie charts • Use complex two way tables • Interpret scatter graphs, draw lines of best fit and use correlation • Find the modal class of a set of continuous data • Use stem and leaf diagrams to find mode, median, mean, range • Identify misleading graphs and statistics	

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Year 8 Core Term: Autumn 2	Unit Title: Expressions and equations	Duration: 11 hrs.
Objectives: • use and interpret algebraic notation: ab in place of a × b • use and interpret algebraic notation: a2 in place of a × a • use and interpret algebraic notation: a3 in place of a × a × a • use and interpret algebraic notation: coefficients written as fractions rather than as decimals • use and interpret algebraic notation: brackets • understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors • simplify and manipulate algebraic expressions to maintain equivalence: collecting like terms • simplify and manipulate algebraic expressions to maintain equivalence: taking out common factors • use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)	**Notes:** • Solve simple linear equations with integer coefficients • Construct and solve linear equations • Substitute integers into formulae and solve for missing values one-step equations • Simplify simple expressions involving powers • Multiply a single term over a bracket • Use the distributive law to take out numerical common factors	

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Year 8 Core Term: Spring 1	Unit Title: Real-life graphs	Duration: 10 hrs.
Objectives: model situations or procedures by using graphs interpret mathematical relationships both algebraically and graphically find approximate solutions to contextual problems from given graphs of a variety of functions: including piece-wise linear graphs	**Notes:** • Draw and interpret line graphs • Interpret information from a complex real-life graph, read values and discuss trends • Draw, use and interpret conversion graphs • Draw and use graphs to solve distance–time problems • Plot the graphs of a function derived from a real-life problem • Discuss and interpret linear and non-linear graphs from a range of sources • Use graphs to solve distance–time problems • Discuss and interpret real-life graphs	

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Year 8 Core Term: Spring 1	Unit Title: Decimals and ratio	Duration: 10 hrs.
Objectives: • use the four operations, including formal written methods, with positive and negative decimals • round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures] • use ratio notation • reduce a ratio to simplest form • divide a given quantity into two parts in a given part:part ratio • divide a given quantity into two parts in a given part:whole ratio • express the division of a quantity into two parts as a ratio • understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction	**Notes:** • Multiply and divide integers and decimals with up to two decimal places • Divide a quantity in more than two parts in a given ratio, including decimal values • Order positive and negative numbers, including decimals, as a list • Multiply or divide any number by 0.1 and 0.01 • Simplify a ratio expressed in decimals • Round numbers to an appropriate degree of accuracy • Use standard column procedures to add and subtract integers and decimals of any size • Multiply and divide by decimals • Use > or < correctly between two negative decimals	

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Year 8 Core Term: Spring 2	Unit Title: Lines and angles	Duration: 10 hrs.
Objectives: • derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies • understand and use the relationship between parallel lines and alternate and corresponding angles • use the sum of angles in a triangle to deduce the angle sum in any polygon • apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides	**Notes:** • Classify quadrilaterals by their geometric properties • Understand a proof that the sum of the angles of a triangle is 180° and of a quadrilateral is 360° • Solve geometric problems using side and angle properties of triangles and special quadrilaterals • Identify alternate angles and corresponding angles • Calculate the interior and exterior angles of regular and irregular polygons • Solve problems involving angles by setting up equations and solving them • Solve geometrical problems showing reasoning	**Levels:** • 6c • 6c • 6c/6b • 6b • 6b/6a • 6b • 6a/7c

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Year 8 Core Term: Summer 1	Unit Title: Calculating with fractions	Duration: 10 hrs.
Objectives: • use the four operations, including formal written methods, with positive and negative fractions • use the four operations, including formal written methods, with positive and negative improper fractions and mixed numbers • work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and 7/2 or 0.375 and 3/8) • use standard units of mass, length, time, money and other measures, including with decimal quantities	**Notes:** • Add and subtract fractions with any size denominator • Multiply integers and fractions by a fraction • Use fractions and decimals within calculations including brackets • Find the reciprocal of a number • Divide integers and fractions by a fraction • Calculate with mixed numbers	

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Year 8 Core Term: Summer 1	Unit Title: Straight-line graphs	Duration: 10 hrs.
Objectives: • recognise, sketch and produce graphs of linear functions of one variable with appropriate scaling, using equations in x and y and the Cartesian plane • reduce a given linear equation in two variables to the standard form y = mx + c • calculate and interpret gradients and intercepts of graphs of such linear equations numerically • calculate and interpret gradients and intercepts of graphs of such linear equations graphically • calculate and interpret gradients and intercepts of graphs of such linear equations algebraically • solve problems involving direct proportion • solve proportion problems including graphical and algebraic representations	**Notes:** • Find gradients of lines • Plot the graphs of linear functions • Find midpoints of line segments • Write the equations of straight line graphs in the form $y = mx + c$ • Identify and describe examples of direct proportion • Solve problems involving direct proportion	

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Year 8 Core Term: Summer 2	Unit Title: Percentages, decimals and fractions	Duration: 10 hrs.
Objectives: • express one quantity as a percentage of another • compare two quantities using percentages • work with percentages greater than 100% • interpret percentages multiplicatively	**Notes:** • Order fractions by converting them to decimals or equivalent fractions. • Find equivalent fractions, decimals and percentages. • Express one number as a percentage of another • Work out a percentage increase or decrease • Solve percentage problems	**Levels:** • 6b • 6c/6b • 6c • 6c/6b • 6a

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