Curriculum Plan Overview – Maths

YEAR 7					
Autumn HT1	**Autumn HT2**	**Spring HT3**	**Spring HT4**	**Summer HT5**	**Summer HT6**
The Number System In this half term of work students will cover: • Place value • Properties of arithmetic • Factors and multiples **Overview of knowledge, understanding and skills (Key Concepts)** • Understanding of base 10 (decimal number) • Revisit skills in column additions and subtraction to reinforce the role of 10 • Understand the 4 main operators (check) • Language of arithmetic (sum, product, difference, calculation, operator and operations.) • Fact families • Know how to use arrays for simplifying calculations • Divisibility rule for 3 • Extension to understanding of multiples (common multiples of pairs) • Use skills of bar models.	**The Number System** In this half term of work students will cover: • Prime factor decomposition • Order of operations • Positive and negative numbers **Overview of knowledge, understanding and skills (Key Concepts)** • Revisit factors, multiples, primes and squares • Introduction to theory of arithmetic • Skills for decomposing numbers into prime factors. • Understand equal and unequal order of priority • Be able to interpret and write calculations involving 4 operations, indices and brackets • Use positive and negative numbers in formulae including additions, subtraction, division and multiplications.	**Algebra and Cartesian Plane** In this half term of work students will cover: • Expressions, equations and inequalities • Coordinates **Overview of knowledge, understanding and skills (Key Concepts)** • Understand what is meant by equation and inequality • Manipulate equations and inequalities • Be able to substitute (into), simplify, expand and factorise expressions • Use coordinates on a grid. • Read and plot coordinates • Know about gradient and slope/steepness • Be able to plot line graphs	**2-D Geometry** In this half term of work students will cover: • Angles • Classifying 2-D shapes • Area of 2-D shapes **Overview of knowledge, understanding and skills (Key Concepts)** • Understanding angle is a measure of turn • Find missing angles • Properties of parallel lines • Angle rules involving parallel lines • Understand the range of properties of quadrilaterals (equal sides, equal angles, parallel sides of a shape). • Forms of measure to represent perimeter and area. • Calculate perimeters and areas of different 2-D shapes. • Concept of perpendicular lines. • Work out area and perimeter of rectilinear shapes, parallelograms and triangles.	**Multiplicative relationships** In this half term of work students will cover: • Conceptualising and comparing fractions • Manipulating and calculating with fractions **Overview of knowledge, understanding and skills (Key Concepts)** • Understand the roles of the numerator and denominator • Mixed and improper fractions, simplest form and decimal conversions • Multiplication with fractions. • Dividing with fractions • Use and application of bar models • Adding and subtraction of fractions. • Know about common denominators and the LCD.	**Multiplicative relationships** In this half term of work students will cover: • Ratio • Transforming 2-D figures **Overview of knowledge, understanding and skills (Key Concepts)** • Use discrete representations of ratio • Use and understand continuous measures of ratio • Compare, simplify and scale ratios • Understand equivalent rations, scale factors and ratio tables • Know how to recognise, describe and perform translations and rotations on shapes • Know about and use reflection

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YEAR 8					
Autumn HT1	**Autumn HT2**	**Spring HT3**	**Spring HT4**	**Summer HT5**	**Summer HT6**
Equations and Inequalities In this half term of work students will cover: • Sequences • Forming and solving equations • Forming and solving inequalities **Overview of knowledge, understanding and skills (Key Concepts)** • Understand using the nth term formula • Solve sequences being generated from patterns of counters and cubes • Be able to find the term of increasing and decreasing sequences • Use square and cubic numbers • Quadratic and geometric sequences • Understanding equality in algebra • Be able to form and solve linear equations with unknowns • Develop understanding of inequalities • Form and solve inequalities	**Graphical Representations** In this half term of work students will cover: • Linear graphs • Accuracy and estimation **Overview of knowledge, understanding and skills (Key Concepts)** • Visit and revisit familiar contexts such as using coordinates, horizontal and vertical lines • Connect relationships between coordinates to the graphs of linear relationships • Be able to round to the nearest one, ten, hundred, thousand and to decimal places • Use rounding to estimate calculations • Understand significant figures • Round to significant figures	**Proportional Reasoning** In this half term of work students will cover: • Ratio review • Real life graphs • Direct and inverse proportion **Overview of knowledge, understanding and skills (Key Concepts)** • Revisit equivalence and sharing a quantity in a ratio. • Connect linearity and gradient (prior concepts) to rates in real life in graphical representation • Be able to use the real-life 'rate' of speed • Read and draw distance-time graphs • Revisit key concepts such as scale factor and constant of proportionality including gradient • Understand key features of inversely proportional relationships. • Find missing values	**Representations and reasoning with Data** In this half term of work students will cover: • Univariate data • Bivariate data **Overview of knowledge, understanding and skills (Key Concepts)** • Introduction to the basics of data collection and analysis • Know about question writing, classifying data, collecting data using tally charts. • Interpret data in bar and pie charts. • Know the terms mean, median, mode and range • Find averages from data • Represent data with a scatter diagram and read from a scatter diagram • Identifying trends • Understand how graphs help make predictions about hypothetical data • Find averages from scatter graphs	**Angles** In this half term of work students will cover: • Angles in polygons • Bearings **Overview of knowledge, understanding and skills (Key Concepts)** • Revisit concepts around polygons and interior angles • Construct and deconstruct polygons from triangles • Calculate the sum of interior angles of a polygon • Find missing angles in polygons • Understand what an 'exterior angle' is • Find the sizes of missing angles in polygons, including interior and exterior angles of regular shapes • Introduction to formal angle notation	**Area, volume, and surface area** In this half term of work students will cover: • Circles • Volume and surface area of prisms **Overview of knowledge, understanding and skills (Key Concepts)** • Understand Pi as ratio between diameter and circumference • Be able to calculate circumference and arc lengths in perimeter • Know Pi is the ratio between radius squared and circumference • Know vocabulary to investigate properties of solid shapes. • Work with 2-D representations and nets. • Understand prisms using nets to identify cross sections. • Use nets to calculate surface area • Understand volume

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YEAR 9					
Autumn HT1	**Autumn HT2**	**Spring HT3**	**Spring HT4**	**Summer HT5**	**Summer HT6**
Probability In this half term of work students will cover: • FDP review • Probability • Sets, Venns and sample space diagrams **Overview of knowledge, understanding and skills (Key Concepts)** • Review of KS2 and KS3 calculations of fractions, decimals and percentages • Understand what probability is • Calculate the probability of single independent events and pair of combined events • Be able to determine whether an experiment is fair or biased • Know how set notation is used from existing knowledge of Venn diagrams • Know how to interpret and convert between representations to solve problems.	**Linear simultaneous equations (SE)** In this half term of work students will cover: • Solving algebraically • Solving graphically **Overview of knowledge, understanding and skills (Key Concepts)** • Revisit solving linear equations • Understand formal algebraic manipulation methods such as equation scaling, additions and subtraction of equations • Know how to solve simultaneous equations (scaling and rearranging) • Know how to solve SE through substitution from one equation into another • Know how to solve simultaneous linear equations graphically • Identify whether a pair of SE have a solution algebraically and graphically	**Geometry of triangles** In this half term of work students will cover: • Angle review • Constructions, congruence and loci • Pythagoras' Theorem **Overview of knowledge, understanding and skills (Key Concepts)** • Revisit calculation of missing angles • Know about estimating, naming, measuring and drawing angles using a protractor. • Know what loci is and use the properties of circles to find the locus of points • Be able to construct perpendicular and angle bisectors • Identify when 2 triangles are congruent • Understand the different contexts in which Pythagoras' theorem can be used (2-D shapes, 3-D shapes and the Cartesian plane.)	**Ratio and proportion** In this half term of work students will cover: • Ratio review • Similarity and enlargement • Trigonometry **Overview of knowledge, understanding and skills (Key Concepts)** • Revisit ratio and understand what they describe • Understand what similarity is • Understand the constant of proportionality • Be able to use what is known about shapes to find missing lengths of right-angled triangles • Be able to directly find the length of the opposite from the adjacent and given angle (and vice versa) • Be able to find any angle in a right-angled triangle from two known side lengths.	**Quadratics** In this half term of work students will cover: • Algebra review • Quadratic expressions and equations **Overview of knowledge, understanding and skills (Key Concepts)** • Revisit algebraic conventions, expanding brackets and simplifying or factorising • Interpret information from a quadratic graph • Understand quadratics written in double brackets • Expanding double brackets • Expand more than 2 brackets • Compare different representations of brackets and look for patterns.	**Reasoning with number** In this half term of work students will cover: • Surds • Indices • Standard form • Growth and decay **Overview of knowledge, understanding and skills (Key Concepts)** • Understand what rational and irrational numbers are. • Understand surds notation and identify and begin to manipulate surds • Be able to write numbers in index form in decimal and fractional forms • Understand the 3 main index laws and simplify expressions involving indices • Understand what standard form is and be able to interpret numbers in standard form and convert • Understand repeated % change results in a different amount of change each iteration • Use decimal multipliers to calculate change forwards and backwards.

Curriculum Plan Overview – Maths

YEAR 10		
Autumn Term	**Spring Term**	**Summer Term**
Foundation Tier **Overview of knowledge, understanding and skills (Key Concepts)** ● Algebra – recap of expanding and factorising single and double brackets ● Angles – angles in parallel lines and angles in polygons ● Percentages – express a quantity as a % of another % of amount with and without a calculator, simple interest, compound interest, % change, increase and decrease of % ● Ratio and proportion - linking ratio and fractions, simplifying ratio (including 3), n:1, share into a ratio, ratio as linear function, best buy, recipes, currency, direct and inverse proportion, recognising graphs **Higher Tier** **Overview of knowledge, understanding and skills (Key Concepts)** ● Algebra - Expanding 1, 2 and 3 brackets. Factorising with and without coefficient. DOTS, Completing the square (turning point and solve), quadratic formulae, linking to graphs ● Solving quadratics - factorising, formula, completing the square. Extend to solving inequalities ● Angles in parallel lines and angles in polygons recap ● Percentages – express a quantity as a % of another % of amount with and without a calculator, simple interest, compound interest, % change, increase and decrease of % ● Ratio and proportion - linking ratio and fractions, simplifying ratio (including 3), n:1, share into a ratio, ratio as linear function, best buy, recipes, currency, direct and inverse proportion, recognising graphs	**Foundation Tier** **Overview of knowledge, understanding and skills (Key Concepts)** ● Probability – language, notations, experimental, tree diagrams with replacement, Venn diagrams ● Similarity and enlargements ● Pythagoras and Trig - Recap of all right-angled trig and Pythagoras' as previously taught in year 9. Include coordinate problems and exact trig values ● **Higher Tier** **Overview of knowledge, understanding and skills (Key Concepts)** ● Probability – language, notations, experimental, tree diagrams with replacement, Venn diagrams including without replacement ● Similarity and enlargements ● Pythagoras and Trigonometry - Recap of all right-angled trigonometry and Pythagoras' as previously taught in year 9. Non-right-angled trigonometry. 3d Pythagoras and Trigonometry.	**Foundation Tier** **Overview of knowledge, understanding and skills (Key Concepts)** ● Sequences ● Transformation extending to column vectors in translations ● Constructions and loci ● Mock examinations to demonstrate learning (GCSE) **Higher Tier** **Overview of knowledge, understanding and skills (Key Concepts)** ● Sequences (including quadratic) and functions ● Recap of Surds and rationalising the denominator ● Transformations including similarity ● Vectors, constructions and loci ● Mock examinations to demonstrate learning (GCSE)

Curriculum Plan Overview – Maths

YEAR 11		
Autumn Term	**Spring Term**	**Summer Term**
Foundation Tier **Overview of knowledge, understanding and skills (Key Concepts)** ● Perimeter and area ● Equations, inequalities and formulae ● Volume and surface area ● Linear Graphs ● Sampling and data **Higher Tier** **Overview of knowledge, understanding and skills (Key Concepts)** ● Circle Theorems ● Simultaneous Equations (non-linear/substitution) ● Rationalising the denominator (Surds recap) ● Box plots ● Cumulative frequency ● IQR ● Histograms	**Foundation Tier** **Overview of knowledge, understanding and skills (Key Concepts)** ● Iteration ● Start of QLA revision programme informed from mock examinations at beginning of Spring term **Higher Tier** **Overview of knowledge, understanding and skills (Key Concepts)** ● Iteration ● Quadratic inequalities ● Gradient and area under a curve ● Transformation of graphs ● Graphs of trigonometry functions including exact trigonometry	**Foundation Tier** **Overview of knowledge, understanding and skills (Key Concepts)** ● Exam revision programme ● Exams start week 30/31 **Higher Tier** **Overview of knowledge, understanding and skills (Key Concepts)** ● Proof ● Exam revision programme ● Exams start week 30/31