

CORE KNOWLEDGE

What I will know and understand by the end of Year 7.



This year in Mathematics, we will be learning		This links to:	Key Vocabulary:
1	<p><u>Algebraic Thinking and Place Value</u></p> <ul style="list-style-type: none"> Sequences - exploring diagrams and lists of numbers Understand and use algebraic notation Equality and equivalence Place value and ordering integers and decimals 	<ul style="list-style-type: none"> Solving equations and using linear graphs in future blocks place value from KS2 through exploration of decimals 	<ul style="list-style-type: none"> Linear Constant difference Inverse Substitution Equation Integer Range Median
2	<p><u>Proportion and Application of Number</u></p> <ul style="list-style-type: none"> Fraction, decimal and percentage (FDP) equivalence Solving problems with addition and subtraction 	<ul style="list-style-type: none"> FDP conversions from KS2 which included $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{5}$. <p><i>Addition and subtraction are core mathematical skills throughout all key stages.</i></p>	<ul style="list-style-type: none"> Fraction Decimal Percentage Commutative Associative
3	<p><u>Application of Number and Directed Number</u></p> <ul style="list-style-type: none"> Solving problems with multiplication and division Fractions and percentages of amounts Operations and equations with directed number 	<ul style="list-style-type: none"> Factors, multiples and prime factorisation in future blocks. Finding percentages of an amount in multiples of 5% and 10% from KS2. <p><i>Directed number is a core mathematical skill used throughout all key stages</i></p>	<ul style="list-style-type: none"> Product Quotient Numerator Denominator Positive Negative Power
4	<p><u>Fractional Thinking</u></p> <ul style="list-style-type: none"> Addition and subtraction of fractions 	<ul style="list-style-type: none"> Addition and subtraction of fractions with common denominators and different denominators at KS2 Different types of fractions in KS4 such as irrational numbers and algebraic. 	<ul style="list-style-type: none"> Unit fraction Numerator Denominator
5	<p><u>Lines and Angles, Reasoning with Number</u></p> <ul style="list-style-type: none"> Constructing, measuring and using geometric notation Developing geometric reasoning Developing number sense 	<ul style="list-style-type: none"> Using rulers, protractors and other measuring equipment at KS2. Geometric proof at KS4 	<ul style="list-style-type: none"> Acute Obtuse Reflex Parallel Perpendicular Vertex Estimate
6	<p><u>Reasoning with Number</u></p> <ul style="list-style-type: none"> Sets and probability Prime numbers and proof 	<ul style="list-style-type: none"> FDP equivalence from earlier in year 7. Using Venn diagrams to find probability in year 8 	<ul style="list-style-type: none"> Element Member Intersect Multiple Factor Prime

Target Grade:		AP1:		AP2:		AP3:	
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CORE KNOWLEDGE

What I will know and understand by the end of Year 8.



This year in Mathematics, we will be learning		This links to:	Key Vocabulary:				
1	<p><u>Proportional Reasoning and Representations</u></p> <ul style="list-style-type: none"> Ratio and scale Multiplicative change Multiplying and dividing fractions Working in the cartesian plane 	<ul style="list-style-type: none"> KS2 use of scale factors Calculating with algebraic fractions in KS4 Finding the equation of a straight line in KS4 	<ul style="list-style-type: none"> Ratio Simplify Scale factor Numerator Denominator Reciprocal Gradient Parallel 				
2	<p><u>Representations and Algebraic Techniques</u></p> <ul style="list-style-type: none"> Representing data Tables and probability Brackets, equations and inequality 	<ul style="list-style-type: none"> Reading data from tables in KS2 Introduction to Venn diagrams in year 7 Solving quadratic equations in KS4 	<ul style="list-style-type: none"> Correlation Outcomes Sample space Expand Factorise Expression 				
3	<p><u>Algebraic Techniques and Developing Number</u></p> <ul style="list-style-type: none"> Sequences Indices Fractions and percentages 	<ul style="list-style-type: none"> Describing sequences and patterns in year 7 block 1 Calculating with standard form in KS4 FDP equivalence in block 2 in year 7 	<ul style="list-style-type: none"> Indices Power Increase Decrease Multiplier 				
4	<p><u>Developing Number</u></p> <ul style="list-style-type: none"> Standard index form Number sense 	<ul style="list-style-type: none"> Place value in block 4, year 7, along with indices earlier in year 8 Calculating error intervals and bounds in KS4 	<ul style="list-style-type: none"> Standard index form Estimation Order of operations 				
5	<p><u>Developing Geometry</u></p> <ul style="list-style-type: none"> Angles in parallel lines in polygon Area of trapezia and circles Line symmetry and reflection 	<ul style="list-style-type: none"> Angles rules discovered in year 7 Geometric proof in KS4 Surface area and volume of cylinders in KS4 Properties of 2D shapes in KS2 	<ul style="list-style-type: none"> Quadrilateral Polygon Interior Exterior, Trapezium Compound shape Symmetry 				
6	<p><u>Reasoning with Data</u></p> <ul style="list-style-type: none"> The data handling cycle Measures of location 	<ul style="list-style-type: none"> Comparing distributions of box plots, cumulative frequency graphs and histograms in KS4 	<ul style="list-style-type: none"> Primary data Secondary data Mean Median Mode Grouped data Modal class 				
Target Grade:		AP1:		AP2:		AP3:	

CORE KNOWLEDGE

What I will know and understand by the end of Year 9.



This year in Mathematics, we will be learning		This links to:	Key Vocabulary:	
1	<p><u>Reasoning with Algebra and Constructing in 2/3 Dimensions</u></p> <ul style="list-style-type: none"> • Straight line graphs • Forming and solving equations • Testing conjectures • Three dimensional shapes 	<ul style="list-style-type: none"> • Sequences, block 1 in year 7 • Solving equations graphically at the end of year 9 and in KS4 • Knowledge of types of number in KS2 and year 7 	<ul style="list-style-type: none"> • Gradient • Intercept • Formulae • Identity 	<ul style="list-style-type: none"> • Proof • Face • Edge • Vertex
2	<p><u>Constructing in 2 and 3 Dimensions and Reasoning with Number</u></p> <ul style="list-style-type: none"> • Construction and congruence • Numbers 	<ul style="list-style-type: none"> • Knowledge of scale factors from year 8 block 1 • Calculating with fractions from year 7 	<ul style="list-style-type: none"> • Construct • Perpendicular, • Bisector • Congruent • Rational 	
3	<p><u>Reasoning with Number</u></p> <ul style="list-style-type: none"> • Using percentages • Maths and money 	<ul style="list-style-type: none"> • Percentage increase and decrease with multipliers from year 8 block 10 • Understanding exponential growth in KS4 	<ul style="list-style-type: none"> • Increase • Decrease • Multiplier • Interest 	
4	<p><u>Reasoning with Geometry</u></p> <ul style="list-style-type: none"> • Deduction • Rotation and translation • Pythagoras' theorem 	<ul style="list-style-type: none"> • Geometric proof, including circle theorems in KS4 • Vectors covered in year 10 • Finding the length of lines in the Cartesian plane in KS4 and beyond 	<ul style="list-style-type: none"> • Rotational symmetry • Translate • Variance • Invariance • Hypotenuse 	
5	<p><u>Reasoning with proportion</u></p> <ul style="list-style-type: none"> • Enlargement and similarity • Solving ratio and proportion problems 	<ul style="list-style-type: none"> • Using negative scale factors in KS4 • Forming equations using inverse proportion in KS4 and beyond 	<ul style="list-style-type: none"> • Enlargement • Scale factor • Direct proportion • Inverse proportion 	
6	<p><u>Reasoning with Proportion and Representations</u></p> <ul style="list-style-type: none"> • Rates • Solving problems using graphs, tables and algebra 	<ul style="list-style-type: none"> • Interpreting area under a curve covered in KS4 and KS5 • Algebraic manipulation from year 7 and 8 • Interpreting tables and graphs, content from KS2 and year 7 and 8 	<ul style="list-style-type: none"> • Density • Compound units, 	
Target Grade:		AP1:	AP2:	AP3:

CORE KNOWLEDGE

What I will know and understand by the end of Year 10.



This year in Mathematical, we will be learning		This links to:	Key Vocabulary:
1	<p><u>Similarity and Developing Algebra</u></p> <ul style="list-style-type: none"> Congruence, similarity and enlargement Trigonometry Representing solutions of equations and inequalities 	<ul style="list-style-type: none"> Enlargement from Year 9 HT 5 Using the sine and cosine graphs in Year 11 and KS5 Block 7 in year 8, brackets equations and inequality 	<ul style="list-style-type: none"> Congruent Similar Hypotenuse Inequality
2	<p><u>Developing Algebra and Geometry</u></p> <ul style="list-style-type: none"> Simultaneous equations Angles and bearings 	<ul style="list-style-type: none"> Solving quadratic simultaneous equations in year 11 and KS5 Angle rules from KS3 Forces in mechanics KS5 	<ul style="list-style-type: none"> Simultaneous Graphically Algebraically Bearing
3	<p><u>Geometry</u></p> <ul style="list-style-type: none"> Working with circles Vectors 	<ul style="list-style-type: none"> Circle theorems in year 11 Carrying out translations in year 9 Proving two vectors are parallel and on a straight line in Year 11 and KS5 	<ul style="list-style-type: none"> Circumference Diameter Radius Sector Scalar
4	<p><u>Proportions and Proportional Change</u></p> <ul style="list-style-type: none"> Ratio and fractions Percentages and interest Probability 	<ul style="list-style-type: none"> Ratio and scale in block 1 in year 8 Fractions, decimals and percentage equivalence in year 7, along with use of multipliers in year 9 Fraction multiplication from KS3 	<ul style="list-style-type: none"> Simple interest Compound interest Exponential Mutually exclusive Independent
5	<p><u>Delving into Data and Using Number</u></p> <ul style="list-style-type: none"> Collecting, representing and interpreting data Non-calculator methods 	<ul style="list-style-type: none"> Statistical analysis, including correlation coefficients in KS5 statistics Calculating with exact values from Number sense in year 8 	<ul style="list-style-type: none"> Sampling Grouped data Distribution Evaluate
6	<p><u>Using Number</u></p> <ul style="list-style-type: none"> Types of number and sequences Indices and roots 	<ul style="list-style-type: none"> Finding the quadratic nth term in year 11 Knowledge of standard index form from year 8 Surd manipulation in year 11 and KS5 	<ul style="list-style-type: none"> Prime factorisation Arithmetic Geometric Root Index form

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CORE KNOWLEDGE

What I will know and understand by the end of Year 11.



This year in Maths (F), we will be learning		This links to:	Key Vocabulary:				
1	<ul style="list-style-type: none"> • Lowest common multiple, highest common factor and prime factorisation. • Percentage increase and decrease with multipliers including compound interest • Factorising and expanding quadratics, solving equations and inequalities 	<ul style="list-style-type: none"> • Percentage increase and decrease in year 10 • Algebraic manipulation studied throughout KS3/4 	<ul style="list-style-type: none"> • Product of prime factors • Multiplier • Compound interest • Quadratic • Factorise • Inequality 				
2	<ul style="list-style-type: none"> • Area of a sector, including leaving answers in terms of pi • Surface area and volume of prisms including cylinders • Relative frequency, listing outcomes and using probability trees 	<ul style="list-style-type: none"> • Area and perimeter in KS3, including area of a circle • Simple fractional probability in KS3 	<ul style="list-style-type: none"> • Sector • Surface area • Relative frequency • Outcomes 				
3	<ul style="list-style-type: none"> • Sharing a quantity into a ratio given 3 or more parts • Recognise direct and inverse proportion • Using angle facts in geometric proof • Pythagoras' theorem and trigonometry in right angled triangles 	<ul style="list-style-type: none"> • Simplifying ratio and missing parts of a ratio in KS3 • Knowledge of angle facts from year 7 and 8 	<ul style="list-style-type: none"> • Direct proportion • Inverse proportion • Pythagoras' theorem • Trigonometry 				
4	<ul style="list-style-type: none"> • Using $y=mx+c$ to find gradients, y intercepts and draw linear graphs • Sampling and bias • Scatter graphs and correlation, lines of best fit and using the line of best fit 	<ul style="list-style-type: none"> • Sequences and using the nth term from KS3 • Study of different charts and graphs in KS3 	<ul style="list-style-type: none"> • Gradient • Y-intercept • Sample • Bias • Correlation 				
5	<ul style="list-style-type: none"> • Constructions and plans and elevations 	<ul style="list-style-type: none"> • Nets and properties of shape from KS2/3 	<ul style="list-style-type: none"> • Bisector • Perpendicular • Plan • Elevation 				
6							
Target Grade:		AP1:		AP2:		AP3:	

CORE KNOWLEDGE

What I will know and understand by the end of Year 11.



This year in Maths (H), we will be learning		This links to:	Key Vocabulary:				
1	<ul style="list-style-type: none"> Exponential growth and decay including compound interest and depreciation Solving quadratics including factorising, quadratic formula, completing the square, iteration, graphically and simultaneously Graphs including equations of parallel/perpendicular lines, equation of a circle, area under a curve 	<ul style="list-style-type: none"> Percentage increase and decrease in year 10 Algebraic manipulation studied throughout KS3/4 	<ul style="list-style-type: none"> Exponential Depreciate Iteration Simultaneous Parallel Perpendicular 				
2	<ul style="list-style-type: none"> Fractional and negative indices and manipulation of surds Transformations including enlargements with a negative and fractional scale factor Surface area and volume of cylinders, spheres and pyramids 	<ul style="list-style-type: none"> Manipulation of surds and indices in KS5 study Volume and surface area of prisms in KS3/4 	<ul style="list-style-type: none"> Surd Negative scale factor Fractional scale factor 				
3	<ul style="list-style-type: none"> Formulae with direct and inverse proportion Scale factors and similar shapes with area and volume Circle theorems Trigonometry including 3D shapes, exact trig values, sine rule and cosine rule 	<ul style="list-style-type: none"> Enlargement using linear scale factor in KS3 Trigonometric identities in KS5 	<ul style="list-style-type: none"> Direct proportion Inverse proportion Similar Exact values 				
4	<ul style="list-style-type: none"> Conditional and dependent probability with probability trees and venn diagrams Interpretation of measures of location from box plots, cumulative frequency and histograms 	<ul style="list-style-type: none"> Statistics KS5, and the study of probability with mathematical notation Study of different charts and graphs in KS3 	<ul style="list-style-type: none"> Conditional Dependent Cumulative frequency Histogram 				
5	<ul style="list-style-type: none"> Constructions and plans and elevations Trig graphs and graph transformations 	<ul style="list-style-type: none"> Nets and properties of shape from KS2/3 Use of trig graphs in KS5 when solving trigonometric equations 	<ul style="list-style-type: none"> Bisector Perpendicular Plan Elevation 				
6							
Target Grade:		AP1:		AP2:		AP3:	