

Maths Year 10 Curriculum

Curriculum Intent: All pupils will study Mathematical concepts within the six strands of Algebra, Number, Shape space and measure, Ratio and proportion, Data Handling and Probability. Within each topic area work will be introduced in a logical order with content broken down into “small steps” to reflect the building blocks of Maths. Pupils will develop fluency in reasoning and problem solving helping to prepare pupils for the rigorous demands of the subject. Opportunities are given for all pupils to make links between topics. Pupils will develop their skills through varied and intelligent practise in order to move from novice learners to experts with each “small step.” In years 10 and 11 pupils will follow slightly different scheme of learning depending on their grouping – topics in *italics* are on the higher course only.

	Autumn Term 1		Autumn Term 2	
Main Topic	Similarity		Developing Algebra	
Secondary Topics	Congruence, similarity and enlargement Understand the difference between congruence and similarity. Enlarge a shape about a point. Understand and use similarity Find sides in similar shapes including pairs of similar triangles Understand and use the conditions for a pair of congruent triangles. <i>Higher content:</i> <i>Area and volume of similar shapes</i> <i>Formal proof for congruency</i> <i>Enlarge a shape by a negative scale factor</i>	Trigonometry Understand trigonometric ratios Work out missing sides and angles in right-angled triangles Know and use exact trigonometric values. <i>Higher content:</i> <i>Use trigonometry in 3D shapes</i> <i>Sine and cosine rules. Area of a triangle using $\frac{1}{2}ab\sin C$</i>	Representing solutions of equations and inequalities Form and solve equations and inequalities in a variety of contexts including unknown on both sides Represent solutions to inequalities on a number line. Represent equations graphically. <i>Higher content:</i> <i>Use set notation for solutions</i> <i>Solve inequalities in 2 variables, identifying regions</i> <i>Solve quadratic equations and inequalities (by factorisation only)</i>	Simultaneous equations Understand that some equations have multiple solutions. Form and solve simultaneous equations algebraically and graphically <i>Higher content:</i> <i>Solve simultaneous equations with one linear and one quadratic</i>
Curriculum links	Angle rules including angles in parallel lines Equations Pythagoras theorem		Context for equations to include probability, area, angles, ratio problems. Revisit equations Revisit plotting straight line graphs	
Cross-curricular links				
Interleaving of skills	Scale factors and multiplicative relationships Multiplying and dividing by fractions	Pythagoras Angles in a triangle	Plotting graphs Solving equations Solving inequalities Substitution	Forming equations Solving equations Substitution
Literacy	Key Words: Enlarge, Scale Factor, Object, Image, Centre of Enlargement, Reflection, Ratio, Proportion, Correspond, Similar, Corresponding, Alternate, Similar, Parallel, Length Scale Factor, Area Scale Factor, Enlarge, Volume Scale Factor, Congruent, Corresponding, Side-Side-Side, Side-Angle-Side, Conditions of Congruence, Proof, Ratio, Corresponding, Opposite, Adjacent, Hypotenuse, Tangent, Sine, Complement, Subject of formula, Cosine, Angle, Inverse, Square Root, Right-angle, Surds, Exact value, Midpoint, Square-based right pyramid, Perpendicular, Non-right-angled, Substitute, Rearrange, Subject of the formula, Inverse, Formulae, Segment, Included Angle		Key Words: Variable, Equation, Balance, Solution, Inverse, Solution Set, Inequality, Greater/ less than (or equal to), Number Line, Inequality, Union, The solution set is ... such that ,, Gradient, Linear, Intersect, Solve graphically, Satisfy, Region, Dashed / Solid line, Test point, Balance, Value, Number Line, Roots, Brackets, Factorise, Sketch, Infinite / Finite, Variables, Substitute, Verify, Unknown, Solve, Intersect, Coordinate, Eliminate, Expression, Negative, Coefficient, Multiplier, Lowest Common Multiple, Formulate, Context, Curve, Factorise, Rearrange, Simplest form, In terms of	

Cultural capital			Use simultaneous equations to solve problems	
Careers	Transferable skills: Problem solving, attention to detail, thinking skills, investigative skills, communication, resilience, determination Specific careers –		Transferable skills: Problem solving, attention to detail, thinking skills, investigative skills, communication, resilience, determination Specific careers –	
Assessment	KMP Mid-year exam End of year exam	KMP Mid-year exam End of year exam	KMP Mid-year exam End of year exam	KMP Mid-year exam End of year exam

	Spring Term 1			Spring Term 2		
Main Topic	Geometry			Proportions and proportional change		
Secondary Topics	Angles and bearings Review KS3 angles rules Understand and use bearings	Working with circles Review area and circumference Name parts of a circle and perform related calculations Find areas and volumes related to circles e.g. cylinder, cone, sphere etc <i>Higher content:</i> Derive, use and prove the first 4 circle theorems Equation of a circle.	Vectors Vector notation Vector arithmetic – addition, subtraction and multiplication by a scalar Vectors and translations <i>Higher content:</i> Geometric proofs with vectors	Ratios and fractions Use ratios, including with mixed units Fractions in ratios Fractions from ratios. Combining ratios. Best buys Currency convert <i>Higher content:</i> Revise area and volume ratios	Percentages and interest Convert FDP Find % / % change Find one number as a % of another Simple and compound interest Exponential change e.g. depreciation Find original values <i>Higher content:</i> Use iterative methods	Probability Review of single event probability Mutually exclusive and independent events Tree diagrams Find probabilities from frequency trees, tables and venn diagrams <i>Higher content:</i> Conditional probability
Curriculum links	Revisit Trigonometry Revisit areas and volumes or other and compound shapes Estimation, Rounding, Significant Figures			Revisit formal methods of calculation Revisit fraction arithmetic		
Cross-curricular links	Physics vectors,			Business- % increase, change, interest		
Interleaving of skills	Angle facts Link bearings to trigonometry	Area of 2 D shape Fraction multiplication Simplify expressions	Translation Coordinates Fraction multiplication	Sharing in ratio Direct proportion Multiplicative relationships	Interest	
Literacy	Key Words: Angle, Three Letter Notation, Ratio, Scale Factor, Three-figure, North Line The bearing of ... from ... , Clockwise, Construct, Scale, Parallel, Corresponding, Perpendicular, Due East, Included Angle, Opposite, Chord, Segment, Sector, Radius, Arc, Circumference, Fraction, Proportion, Isosceles, Centre, Diameter, Pythagoras, Segment, Subtend, Cyclic, Vertices Perpendicular height, Base, Hemisphere, Sphere, Curved Surface, in terms of π , Slant height, Net, Scale factor, Root, Direction, Magnitude, Size, Arrow			Key Words: Equivalent, Simplest Form, Ratio, Convert, Share, More/ less than, Compare, Proportion, Gradient, Origin, Exchange Rate, Convert, Represent, Bearing, Integer, For every ..., there are..., Best value, Unit cost, Combine, LCM, Equation, Express, Area Scale Factor, Area Ratio, Volume Scale Factor, Volume Ratio, Similar, Enlarge, Equivalent, Convert, Multiplier, Percentage, Interest, Reduce, Express, Denominator, Compound, Repeated, Change, Depreciate, Reverse, Original, Growth, Decay, Iterate, Repeat, Fraction, Decimal, Exact value, Simplest form, Outcome, Event, Complement, Intersect, Relative Frequency, Estimate, Universal set, Venn Diagram, Sample Space, Systematic,		

	Scalar, Multiplier, Column Vector, Resultant, Addition, Subtraction, Express, Negative, Vector Journey, Parallel, Magnitude, Fractional, Collinear, Common point, Show, Justify			Independent Events, Tree Diagrams, At least one, Dependent Events, Independent Events, Given, Show, Conditional Probability, Intersection		
Cultural capital				Interest on savings or borrowing Best buy Currency exchange		
Careers	Transferable skills: Problem solving, attention to detail, thinking skills, investigative skills, communication, resilience, determination Specific careers –			Transferable skills: Problem solving, attention to detail, thinking skills, investigative skills, communication, resilience, determination Specific careers –		
Assessment	KMP Mid-year exam End of year exam	KMP End of year exam	KMP End of year exam	KMP End of year exam	KMP End of year exam	KMP End of year exam

	Summer Term 1		Summer Term 2		
Main Topic	Delving into data	Using Number	Using Number		
Secondary Topics	Collecting, representing and interpreting data – Understand sampling. Construct and interpret tables and line graphs for time series data. Understand and represent grouped data. Understand and identify correlation. Use a line of best fit and understand extrapolation. Construct/interpret frequency polygons. Evaluate measures of location and dispersion. Use statistical diagrams and measures to compare distributions <i>Higher content:</i> <i>Construct and interpret cumulative frequency diagrams, box plots and histograms</i> <i>Understand quartiles</i> <i>Use and interpret the inter-quartile range</i>	Non-calculator methods Four operations with integers (positive and negative), fractions and decimals with and without context Work with exact answers e.g. area and volume. Evaluate calculations involving percentages. Upper and lower bounds <i>Higher content:</i> <i>Calculations involving upper and lower bounds.</i>	Types of number and sequences Use factors, multiples, primes and prime factorisation. Recognise arithmetic and geometric sequences. Recognise and use other sequences. <i>Higher content:</i> <i>Nth term of a quadratic sequence.</i> <i>Work with rational, irrational numbers including recurring decimals.</i>	Indices and roots Work out powers and roots. Use rules of indices. Calculate with numbers in standard form. <i>Higher content:</i> <i>Calculate with surds.</i> <i>Use fractional indices</i>	Manipulating expressions Simplifying algebraic expressions Use identities Form and solve equations and inequalities with fractions Represent numbers algebraically Algebraic arguments and proof Higher content Add, subtract, multiply and divide algebraic fractions Solve equations with algebraic fractions
Curriculum links	Using equations e.g. solving problems about the mean. Non-calculator methods.		Fractions, decimals, % Factors and multiples Revisit factors, multiple and primes Revisit sequences Powers and roots Revisit simplifying algebraic expressions		

Cross-curricular links	Geography – data collection and interpretation Science – scatter graphs and lines of best fit Science - rounding		IT - sequences		
Interleaving of skills	Equations of lines Equations Midpoints	Estimation Rounding			
Literacy	Key Words: Population, Representative, Proportion, Stratified, Source, Questionnaire, Midpoint, Interval, Row, Column, Composite, Total, Sector, Subtend, Bias, Misleading, Frequency density, Class width, Class Interval, Distribution, Outlier, Estimate, Subtotal, Quarter, Trend, Modal Class, Median, End Point, Cumulative, Interquartile range, Upper/ Lower Quartile, Range, Spread, Consistent, Interquartile Range, Relationship, Variable, Correlation, Interpolate/ Interpolation, Line of best fit, Extrapolate, Balance, Profit/ Loss, Perimeter, Area, Mixed number, Improper Fraction, In terms of, Square/ Cube root, Terminating, Recurring, Simplify, Factors, Rationalise, Denominator, Degree of Accuracy, Approximate, Decimal Places, Significant Figures, Error Interval, Truncate, Maximum/ Minimum, Quotient, Compensate, Factorise, Standing charge, Credit/ Debit, Force, Density		Key Words: Integer, Prime, Express, Index Form, Prime Factors, Intersection, Common difference, Common ratio, Oscillate, Predict, Arithmetic, Geometric, Term-to-term, Position-to-term, Quadratic, Coefficient, Root, Prime Factorisation, Fourth root, Exponent, Index/ Indices, Million/ Billion, Base, Simplify, Power, Negative, Exponent, Base, Unit fraction, Non-unit fraction, SCI/EXP, Scientific Notation, Like/ Unlike, Coefficient, Expression, Equivalent, Numerator, Denominator, LCM, Sum, Reciprocal, Product, Cancel, Factorise, Solution, Strict, Quadratic, Verify, Odd/ Even, General, Justify, Counterexample		
Cultural capital	Real-life graphs Misleading graphs		Prime numbers for data encryption		
Careers	Transferable skills: Problem solving, attention to detail, thinking skills, investigative skills, communication, resilience, determination Specific careers –		Transferable skills: Problem solving, attention to detail, thinking skills, investigative skills, communication, resilience, determination Specific careers –		
Assessment	KMP End of year exam	KMP End of year exam	KMP Mid-year exam End of year exam	KMP Mock 2	KMP Mock 2