



Mathematics Curriculum – Year 10 Higher Tier

Big Ideas & Purpose

The aims of teaching and learning mathematics are to encourage and enable students to: recognise that mathematics permeates the world around us; appreciate the usefulness, power and beauty of mathematics and enjoy mathematics and develop patience and persistence when solving problems.

Programme of Study

HT1	HT2	HT3	HT4	HT5	HT6
Number Number problems and reasoning Place value and estimating HCF and LCM Calculating with powers (indices) Zero, negative and fractional indices Powers of 10 and standard form Surds Algebra Algebraic indices Expanding and factorising Equations Formulae Linear sequences Non-linear sequences More expanding and factorising	Interpreting and representing data Statistical diagrams Time series Scatter graphs Line of best fit Averages and range Fractions, ratio and percentages Fractions Ratios Ratio and proportion Percentages Fractions, decimals and percentages Angles and trigonometry Angle properties of triangles and quadrilaterals Interior and exterior angles of a polygon Pythagoras' theorem Trigonometry	Graphs Linear graphs More linear graphs Graphing rates of change Real-life graphs Line segments Quadratic graphs Cubic and reciprocal graphs More graphs Area and volume Perimeter and area Units and accuracy Prisms Circles & Sectors Cylinders and spheres Pyramids and cones Transformations and constructions 3D solids Reflection and rotation Enlargement Combinations of transformations	Bearings and scale drawings Constructions Loci Equations and inequalities Solving quadratic equations Completing the square Solving simple simultaneous equations Solving linear and quadratic simultaneous equations Solving linear inequalities Probability Combined events Mutually exclusive events Experimental probability Independent events and tree diagrams Conditional probability Venn diagrams and set notation	Multiplicative reasoning Growth and decay Compound measures Ratio and proportion Similarity and congruence Congruence Geometric proof and congruence Similarity Similarity in 3D solids More trigonometry Accuracy Graph of the sine function Graph of the cosine function The tangent function Calculating areas and the sine rule The cosine rule and 2D trigonometric problems Solving problems in 3D Transforming trigonometric graphs	Further statistics Sampling Cumulative frequency Box plots Drawing histograms Interpreting histograms Comparing and describing populations Equations and graphs Solving simultaneous equations graphically Representing inequalities graphically Graphs of quadratic functions Solving quadratic equations graphically Graphs of cubic functions

Key Assessments

- Assessments take place after every unit.
- Usually 2 per half term.
- Year 10 will take an examination based on the work covered in units 1-5 in January.
- Assessments take place after every unit.
- Year 10 will also take an end of year examination in the summer term. This will be a full GCSE examination, with 3 papers.

Key Skills

- To provide opportunities for learner to demonstrate their knowledge of mathematics across a whole range of topic areas.
- To allow learners to develop their problem-solving strategies and provide the confidence and skills required to tackle unfamiliar challenges.
- To build on work carried out in Key Stage 3 to prepare the learner to function mathematically.

Links to Careers

GCSE maths is a requirement for all degree courses. It teaches accuracy and precision in work. The analytical and problem-solving skills you learn are valuable in many different careers, for example Accountancy, Teaching, Business, Medicine, Architecture and Computer Studies.



Mathematics Curriculum – Year 10 Middle Tier

Big Ideas & Purpose

The aims of teaching and learning mathematics are to encourage and enable students to: recognise that mathematics permeates the world around us; appreciate the usefulness, power and beauty of mathematics and enjoy mathematics and develop patience and persistence when solving problems.

Programme of Study	HT1	HT2	HT3	HT4	HT5	HT6
	Algebra Algebraic expressions Simplifying expressions Substitution Formulae Expanding brackets Factorising Using expressions and formulae Equations, inequalities and sequences Solving equations with brackets Inequalities More formulae Generating sequences Using the nth term of a sequence Graphs Coordinates Linear graphs Gradient $y = mx + c$ Real-life graphs	Distance-time graphs More real-life graphs Quadratic equations and graphs Expanding double brackets Plotting quadratic graphs Using quadratic graphs Factorising quadratic expressions Solving quadratic equations algebraically More algebra Graphs of cubic and reciprocal functions Non-linear graphs Solving simultaneous equations graphically Solving simultaneous equations algebraically Rearranging formulae Proof Number Calculations Decimal numbers Place value	Factors and multiples Squares, cubes and roots Index notation Prime factors Fractions and percentages Working with fractions Operations with fractions Multiplying fractions Dividing fractions Fractions and decimals Fractions and percentages Calculating percentages Ratio and proportion Writing ratios Using ratios Ratios and measures Comparing using ratios Using proportion Proportion and graphs Proportion problems Multiplicative reasoning Percentages Growth and decay Compound measures	Distance, speed and time Direct and inverse proportion Fractions, indices and standard form Multiplying and dividing fractions The laws of indices Writing large and small numbers in standard form Calculating with standard form Angles Properties of shapes Angles in parallel lines Angles in triangles Exterior and interior angles Geometrical patterns Perimeter, area and volume Rectangles, parallelograms and triangles Trapezia and changing units Area of compound shapes Surface area of 3D solids Volume of prisms	Perimeter, area and volume Circumference of a circle Area of a circle Semicircles and sectors Composite 2D shapes and cylinders Pyramids and cones Spheres and composite solids Right-angled triangles Pythagoras' theorem Trigonometry: the sine ratio Trigonometry: the cosine and tan ratio Finding lengths and angles using trigonometry	Congruence, similarity and vectors Similarity and enlargement More similarity Using similarity Congruence Vectors Transformations Translation Reflection Rotation Enlargement Describing enlargements Combining transformations Constructions, loci and bearings 3D solids Plans and elevations Accurate drawings Scale drawings and maps Constructions Loci and regions Bearings
Key Assessments	<ul style="list-style-type: none"> Assessments take place after every unit. Usually 2 per half term. 		<ul style="list-style-type: none"> Year 10 will take an examination based on the work covered in units 1-5 in January. Assessments take place after every unit. 		<ul style="list-style-type: none"> Year 10 will also take an end of year examination in the summer term. This will be a full GCSE examination, with 3 papers. 	
Key Skills	<ul style="list-style-type: none"> To provide opportunities for learner to demonstrate their knowledge of mathematics across a whole range of topic areas. To allow learners to develop their problem-solving strategies and provide the confidence and skills required to tackle unfamiliar challenges. To build on work carried out in Key Stage 3 to prepare the learner to function mathematically. 			Links to Careers Mathematics teaches accuracy and precision in work. The analytical and problem-solving skills you learn are valuable in many different careers, for example Accountancy, Finance, Teaching, Business, Medicine, Engineering, Architecture and Computer Studies.		



Mathematics Curriculum – Year 10 Lower Tier

Big Ideas & Purpose

The aims of teaching and learning mathematics are to encourage and enable students to: recognise that mathematics permeates the world around us; appreciate the usefulness, power and beauty of mathematics and enjoy mathematics and develop patience and persistence when solving problems.

Programme of Study

HT1	HT2	HT3	HT4	HT5	HT6
Number	Stem and leaf diagrams	Angles	area	Ratio and proportion	Probability
Calculations	Pie charts	Properties of shapes	Graphs	Writing ratios	Calculating probability
Decimal numbers	Scatter graphs	Angles in parallel lines	Coordinates	Using ratios	Two events
Place value	Line of best fit	Angles in triangles	Linear graphs	Ratios and measures	Experimental probability
Factors and multiples	Fractions and percentages	Exterior and interior angles	Gradient	Comparing using ratios	Venn diagrams
Squares, cubes and roots	Working with fractions	Geometrical patterns	$y = mx + c$	Using proportion	Tree diagrams
Index notation	Operations with fractions	Averages and range	Real-life graphs	Proportion and graphs	Multiplicative reasoning
Prime factors	Multiplying fractions	Mean and range	Distance-time graphs	Proportion problems	Percentages
Algebra	Dividing fractions	Mode, median and range	More real-life graphs	Right-angled triangles	Growth and decay
Algebraic expressions	Fractions and percentages	Types of average	Transformations	Pythagoras' theorem	Compound measures
Simplifying expressions	Calculating percentages	Estimating the mean	Translation	Trigonometry: the sine ratio	Distance, speed and time
Substitution	Equations, inequalities and sequences	Sampling	Reflection	Trigonometry: the cosine and tangent ratio	Direct and inverse proportion
Formulae	Solving equations	Perimeter, area and volume	Rotation	Finding lengths and angles using trigonometry	Constructions, loci and bearings
Expanding brackets	Solving equations with brackets	Triangles, Rectangles and parallelograms	Enlargement		solids
Factorising	Solving equations with brackets	Trapezia and changing units	Describing enlargements		Scale drawings and maps
Using expressions and formulae	Inequalities	Area of compound shapes	Combining transformations		Loci and regions
Graphs, tables and charts	More formulae	Surface area of 3D solids			
Frequency tables	Generating sequences	Volume of prisms			
Two-way tables	Using the nth term of a sequence	More volume and surface			
Representing data					
Time series					

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Links to Careers

GCSE maths is a requirement for all degree courses. It teaches accuracy and precision in work. The analytical and problem-solving skills you learn are valuable in many different careers, for example Accountancy, Teaching, Business, Medicine, Architecture and Computer Studies.