



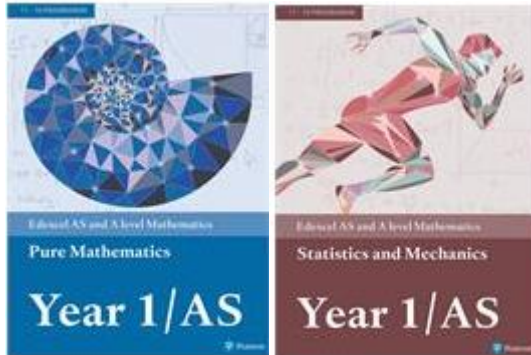
Mathematics

Staff within the department	Mr I Walker Miss C Porter Mrs V Armstrong Mrs C Liston Mr C Liddle Miss R Bullerwell Mr M Pike
Subject overview	<p>The department is staffed with 7 specialist teachers who deliver Mathematics from KS3 to KS5 and 2 dedicated GCSE intervention teachers.</p> <p>The department has 7 fully dedicated Mathematics classrooms and access to its own computer room with 30 PCs.</p> <p>The department recognises that Mathematics is a vital subject for all pupils regardless of their future aspirations or chosen future learning choices and as such liaises closely with all other departments within the school to ensure that Numeracy is embedded across the whole academy curriculum.</p> <div style="display: flex; align-items: center; justify-content: space-around;">  <div style="text-align: center;"> <p>We would encourage pupils to come to school at KS3 and KS4 with a calculator to help them become familiar with key techniques. We would strongly encourage pupils buying a calculator to choose the</p> <p>CASIO fx-83GT PLUS</p> <p>This is the calculator used within school and is ideal for pupils studying GCSE at both Foundation & Higher papers. Having a high quality calculator which you are familiar with is key as the new GCSE has two thirds of its assessment with a calculator.</p> </div> </div>
Key Stage 3 overview	<p>The Mathematics course at Key Stage 3 is designed to give pupils the necessary grounding and skills to enable them to succeed at GCSE.</p> <p>Students will build on the skills learned in primary schools continuing to develop their Numeracy while adding to their knowledge of Algebra, Geometry and Handling Data. The department employs problem solving and collaborative learning as a critical part of its teaching providing pupils with the interpersonal and analytical skills needed to flourish at GCSE.</p> <p>Dependent on their performance at KS2 pupils will follow either the Gold or the Platinum scheme of work.</p>
Key Stage 4 overview	<p>Thorp Academy uses the AQA Examination Board.</p> <p>In the Summer of year 11 pupils sit their examinations either at Foundation or Higher level. Foundation allows pupils achieve grades 1 -5 and the higher paper allows pupils to achieve grades 4 – 9.</p> <p>Both the Foundation and Higher examinations consists of 3 papers- all of which take 1hr 30minutes.</p> <p style="text-align: center;">Paper 1 is completed without the use of a calculator Paper 2 and 3 are completed with the use of a calculator</p>
Key Stage 5 overview	<p>Thorp Academy uses the Edexcel Examination Board and uses the new two year specification for A Level.</p> <p>The new curriculum encourages all pupils to work towards a broad understanding of key areas of Mathematics.</p> <p>In the Summer of year 13 pupils will sit their examinations consisting of separate examinations in</p> <ul style="list-style-type: none"> Pure Mathematics – 2hr Statistics & Mechanics 1hr 15mins <div style="display: flex; align-items: center; justify-content: space-around;">  <div style="text-align: center;"> <p>A calculator can be used in both examinations</p> <p>We would encourage pupils to come to school at KS5 with a calculator to help them become familiar with key techniques. We would strongly encourage pupils buying a calculator to choose the</p> <p>CASIO fx-991EX</p> </div> </div>

This is the calculator recommended by the exam board and offers an advantage over more basic models when dealing with statistics.

We strongly recommend that pupils beginning this course own a copy of the course textbooks.

Books for Year 12



Books for Year 13



Gold Schemes of Work

SUBJECT	STEPS 1	STEPS 2	STEPS 3	STEPS 4	STEPS 5	STEPS 6
Year 7	<ul style="list-style-type: none"> Number: Working with integers and negative numbers Calculating: All 4 functions Calculating: Short & Long Division 	<ul style="list-style-type: none"> Visualising: Using a protractor & 3D Shapes Properties of Shapes: Triangles & Quadrilaterals Equivalent Fractions Decimals & Percentages Algebra: Using basic Formula 	<ul style="list-style-type: none"> Proportion: enlargement Sequences: Linear Sequence Calculating with fractions and percentages 	<ul style="list-style-type: none"> Measuring: Converting Metric Units Angles: at a point and on straight line Calculating: Areas & Perimeters of Rectangles & Triangles 	<ul style="list-style-type: none"> Algebra: writing Expressions Estimating: Rounding and sensible estimates Mathematical Movements: Coordinates & Transformation 	<ul style="list-style-type: none"> Data: Read from graphs & tables Data: Averages & Range
Year 8	<ul style="list-style-type: none"> Number: LCM & HCF Calculating: Multiply & divide with decimals Shape Properties: Polygons & 3D Shapes 	<ul style="list-style-type: none"> Comparing: Fractions, Decimals & Percentages Notation & symmetry Algebra: Expressions, Equations and Formula Converting: Fractions, Decimals & Percentages 	<ul style="list-style-type: none"> Measuring: Units of length, mass, volume, time and money Calculating Shape: Missing Angles Calculating: Mixed & Improper Fractions and 	<ul style="list-style-type: none"> Proportion: Using Ratio Sequence: nth term Solving: Two step equations Estimation: Rounding to decimal places & significant figures 	<ul style="list-style-type: none"> Calculating Space: Trapeziums & Surface Area Mathematical Movement: Reflecting on X and Y axis 	<ul style="list-style-type: none"> Data: Discrete Data & Graphs Data: Averages from data in a table

			percentage s			
Year 9	<ul style="list-style-type: none"> Find Prime factors, HCF & LCM Write & use standard form Use negative numbers with all 4 functions Use the order of operations with indices & roots Enlarge a shape through a centre of enlargement Use bearings List outcomes from probability Convert between a fraction and a terminating or recurring decimal 	<ul style="list-style-type: none"> Convert between fractions/Decimals & Percentages Factorise Linear expressions Use laws of indices for multiplication & division Substitute positive & negative numbers into a formula Change the subject of a formula Use ratio in context Use compound units for speed. 	<ul style="list-style-type: none"> Manipulate & solve equations including brackets & unknowns on both sides Solve equations graphically Solve problems involving percentage change using a decimal multiplier 	<ul style="list-style-type: none"> Use term to terms rules for sequences Use the nth term to describe and continue a sequence Work with angles on parallel lines and know the rules for alternate, corresponding and co-interior angles Work with the interior and exterior angles for polygons. Calculate the Probability of independent events using theoretical probability. 	<ul style="list-style-type: none"> Calculate the area & circumference of a circle Find the volume of a prism Know and use the equation for a straight line and draw linear graphs. Plot and sketch quadratic functions Plot & interpret speed, distance and time graphs. 	<ul style="list-style-type: none"> Represent probability using a Venn Diagram Represent Probability using a two way table Draw and interpret frequency trees Calculate and interpret averages for data in a table and in groups Know the difference between continuous and discrete data Draw a scatter graph and use correlation.
Year 10	<ul style="list-style-type: none"> Calculate with positive integers and roots Write number in Standard form Calculate with standard form Find the upper and lower bounds for a rounded number Use and work with plans & elevations Use constructions and loci Revise previous learning of fractions, Decimals and Percentages 	<ul style="list-style-type: none"> Expand Quadratics Factorise Linear Expressions Factorise Quadratics Form Expressions & Formula Use and work with identities. Work with and solve inequalities Represent inequalities on a number line Revise previous learning on calculating with Fractions 	<ul style="list-style-type: none"> Recognise the Fibonacci Sequence Generate Quadratic Sequences Substitute into quadratic formulas Plot and interpret Time Series graphs Use scatter graphs and correlation Revise Previous learning on Percentages 	<ul style="list-style-type: none"> Know the criteria for congruent triangles Use a tree diagram to represent probability for dependent and independent events Understand and use relative frequency Represent answers in surd form. Cancel down a Surd to its simplest form. Add, subtract, multiply & Divide Surds. 	<ul style="list-style-type: none"> Calculate the arc length for a sector and calculate the area of a sector Calculate volume & surface area of a cylinder Apply Pythagoras Theorem to problem solving Use the equation of a straight line $y = mx + c$ Plot and sketch quadratic & cubic graphs Revise prior learning on solving equations 	<ul style="list-style-type: none"> Know the difference between direct and inverse proportion Work with compound measures Use properties of similar shapes Work with Simultaneous equations Know the three trigonometric functions & use them to calculate missing lengths and angles.
Year 11	•	•	•	•	• GCSE Revision	• GCSE Revision
Revision Resources	The school subscribes to the following revision websites www.hegartymaths.com www.mymaths.co.uk					

Platinum Schemes of Work

	STEPS 1	STEPS 2	STEPS 3	STEPS 4	STEPS 5	STEPS 6
Year 7	<ul style="list-style-type: none"> • Number: LCM & HCF • Calculating: Multiply & divide with decimals • Shape Properties: Polygons & 3D Shapes 	<ul style="list-style-type: none"> • Comparing: Fractions, Decimals & Percentages • Notation & symmetry • Algebra: Expressions, Equations and Formula • Converting: Fractions, Decimals & Percentages 	<ul style="list-style-type: none"> • Measuring: Units of length, mass, volume, time and money • Calculating Shape: Missing Angles • Calculating: Mixed & Improper Fractions and percentages 	<ul style="list-style-type: none"> • Proportion: Using Ratio • Sequence: nth term • Solving: Two step equations • Estimation: Rounding to decimal places & significant figures 	<ul style="list-style-type: none"> • Calculating Space: Trapeziums & Surface Area • Mathematical Movement: Reflecting on X and Y axis 	<ul style="list-style-type: none"> • Data: Discrete Data & Graphs • Data: Averages from data in a table
Year 8	<ul style="list-style-type: none"> • Number: Venn Diagrams with HCF & LCM • Calculating: Substituting Negative numbers • Probability: Probability Spaces & Mutually Exclusive events 	<ul style="list-style-type: none"> • Constructing: 3D Shapes, Scale Diagrams & Enlargements • Algebra: Expanding & Factorising • Proportion: Ratio and fractions 	<ul style="list-style-type: none"> • Converting: Terminating & recurring decimals, fractions & percentage • Sequences: Exploring the nth term • Angles: Parallel lines & Polygons • Calculating: Percentage change & repeat percentage change 	<ul style="list-style-type: none"> • Calculating Space: Area & Circumference of a circle. • Algebra: Straight line graphs • Graphs: Speed, Distance and Time graphs 	<ul style="list-style-type: none"> • Solving: Linear Equations with unknowns in two places • Probability: Venn Diagrams & Frequency Trees 	<ul style="list-style-type: none"> • Data: Continuous Data & Scatter Diagrams • Data: Averages for grouped data and comparing

Year 9	<ul style="list-style-type: none"> Calculate with positive integers and roots Write number in Standard form Calculate with standard form Find the upper and lower bounds for a rounded number Use and work with plans & elevations Use constructions and loci Revise previous learning of fractions, Decimals and Percentages 	<ul style="list-style-type: none"> Expand Quadratics Factorise Linear Expressions Factorise Quadratics Form Expressions & Formula Use and work with identities. Work with and solve inequalities Represent inequalities on a number line Revise previous learning on calculating with Fractions 	<ul style="list-style-type: none"> Recognise the Fibonacci Sequence Generate Quadratic Sequences Substitute into quadratic formulas Plot and interpret Time Series graphs Use scatter graphs and correlation Revise Previous learning on Percentages 	<ul style="list-style-type: none"> Know the criteria for congruent triangles Use a tree diagram to represent probability for dependent and independent events Understand and use relative frequency Represent answers in surd form. Cancel down a Surd to its simplest form. Add, subtract, multiply & Divide Surds. 	<ul style="list-style-type: none"> Calculate the arc length for a sector and calculate the area of a sector Calculate volume & surface area of a cylinder Apply Pythagoras Theorem to problem solving Use the equation of a straight line $y = mx + c$ Plot and sketch quadratic & cubic graphs Revise prior learning on solving equations 	<ul style="list-style-type: none"> Know the difference between direct and inverse proportion Work with compound measures Use properties of similar shapes Work with Simultaneous equations Know the three trigonometric functions & use them to calculate missing lengths and angles.
Year 10	<ul style="list-style-type: none"> Evaluating Indices & Roots Recurring Decimals Repeat Percentage Change Reverse Percentage Quadratic Sequences Geometric & Arithmetic Progressions 	<ul style="list-style-type: none"> Properties of similar shapes Using & Applying Trigonometric Ratio Solve equations using iteration and trial & improvement Form & solve Simultaneous equations. Complete Enlargements with positive, negative * fractional scale factors. Use & apply Direct & Inverse Proportion. 	<ul style="list-style-type: none"> Work with all 4 functions with algebraic fractions Expand quadratics and binomials involving surds Factorise quadratics with a coefficient of x^2 Use Pythagoras in 3D Find the volumes and surface areas of key 3D Shapes 	<ul style="list-style-type: none"> Represent inequalities on a graph Represent shaded areas on graphs as inequalities Know and apply Circle theorems to problem solving Use, add, subtract and multiply vectors. Solve geometrical problems using vectors 	<ul style="list-style-type: none"> Use Sampling Use and interpret Box Plots Use and interpret Cumulative Frequency graphs Find the Upper and Lower Quartiles for a data set Know the relationship between parallel and perpendicular lines Know and use the equation for a circle Solve problems involving tangents 	<ul style="list-style-type: none"> Solve Quadratic equations by factorising, using the formula and completing the square. Recognise and exponential graphs Find the gradient of a curve Read and interpret Speed Distance & time graphs.
Year 11					<ul style="list-style-type: none"> GCSE Revision 	<ul style="list-style-type: none"> GCSE Revision

Additional	STEPS 1	STEPS 2	STEPS 3	STEPS 4	STEPS 5	STEPS 6
Year 7						
Year 8						
Year 9						
Year 10						
Year 11						

Additional	STEPS 1	STEPS 2	STEPS 3	STEPS 4	STEPS 5	STEPS 6
Year 7						
Year 8						
Year 9						
Year 10						
Year 11						