

Long-term planning

Maths - Year 10

Year 10 Themes	Autumn term 1	Autumn term 2	Spring term 1	Spring term 2	Summer term 1		Summer term 2	
Developing mathematical skills to explore and solve more sophisticated problems. Developing GCSE exam techniques.	Students will know that	Students will know that	Students will know that	Students will know that	Students will know that		Students will know that	
					Foundation	Higher	Foundation	Higher
	Compound interest involves repeated percentage change and is calculated using a multiplier raised to a power to represent time. Growth and decay situations can be represented using exponential functions and percentage multipliers. The surface area and volume of complex 3D shapes are calculated by combining the surface areas and volumes of component shapes, applying the appropriate formulae.	Changing the subject of a formula involves rearranging using inverse operations. Trigonometric ratios (sine, cosine, tangent) relate angles and sides in right-angled triangles to find missing lengths and angles. Loci represent points that satisfy geometric conditions, constructed with compass and straightedge.	The equation of a straight line can be written in the form $y = mx + c$, where m is the gradient and c is the y -intercept, and it can be found using a known gradient and coordinates. Parallel lines have equal gradients, and perpendicular lines have gradients that multiply to -1 . Set notation is used to describe collections of elements and relationships between sets using symbols such as \cup and \cap . Tree diagrams represent all possible outcomes of probability problems and can be used for both independent and dependent events by adjusting probabilities accordingly.	Compound measures are derived by combining units and require correct unit conversion. Ratios can be combined, simplified, and linked to algebraic expressions, and can be used to express relationships. Velocity–time graphs show how velocity changes over time. Graphs of cubic, reciprocal, and exponential functions have distinct shapes and properties.	Arithmetic sequences have a constant difference; geometric sequences have a constant ratio. Sampling methods impact data reliability, and biased samples lead to misleading conclusions. Direct proportion is $y = kx$, and inverse proportion is $y = k/x$, both graphable. Transformations can be combined and described mathematically. Error intervals show the possible range of values when	Quadratic sequences have a constant second difference; geometric sequences have a constant ratio. Sampling methods must be fair to avoid bias; capture-recapture estimates population size using proportion. Direct and inverse proportion are expressed algebraically and graphically. Transformations can be combined and described systematically. Bounds show upper and lower	Expanding double brackets uses the distributive property; factorising quadratics involves finding two numbers that multiply to the constant and add to the middle term. Frequency tables with grouped data show data distribution, and calculations like mean and median use midpoints and class width. Statistical diagrams (bar charts, histograms, pie charts, and box plots) visually represent data	Fractions convert to recurring decimals by division, and recurring decimals to fractions using algebra to represent the repeating part. Expanding triple brackets involves distributive property and combining like terms, often in multiple steps. Quadratic equations are solved by factorising or using the quadratic

	Solving simultaneous equations finds values that satisfy several equations, using elimination, substitution, or graphically.				rounding or measuring. Index laws simplify expressions with powers.	limits in calculations, affecting accuracy. Estimating roots and powers uses square roots, cube roots, and fractional indices, applying index laws.	and are used for different types of analysis.	formula to find the roots. The turning point of a quadratic graph (vertex) is found using $x = -b/2a$. Cumulative frequency graphs show data totals, helping to find medians, percentiles, and quartiles. Statistical diagrams like histograms, box plots, and cumulative frequency curves represent data visually.
	Students will know how to	Students will know how to	Students will know how to	Students will know how to	Students will know how to		Students will know how to	
					Foundation	Higher	Foundation	Higher
	Calculate compound interest Solve problems including growth and decay	Change the subject of formulae Use trigonometric ratios to solve problems	Find the equation of a straight line from information about its gradient and points	Calculate compound measures Combine and change ratios	Generate rules for arithmetic and geometric sequences Solve problems involving	Generate rules for quadratic and geometric sequences Solve problems involving	Expand double brackets and factorise quadratic equations to solve problems	Convert between fractions and recurring decimals

	Find the surface area and volume of complex 3D shapes Solve linear simultaneous equations	Solve problems involving loci	Solve problems involving parallel and perpendicular lines Use set notation Construct tree diagrams for dependent and independent events	Solve ratio problems that include algebra Solve problems involving velocity-time graphs Explore graphs of cubic, reciprocal and exponential functions	sampling and bias Interpret and graph direct and inverse proportion equations Combine transformations Find error intervals Use index laws	sampling, bias and capture-recapture Interpret and graph direct and inverse proportion Combine transformations Find bounds for calculations Estimate roots and powers and calculate with indices of the form $\frac{a}{b}$	Interpret and complete calculations using frequencies tables with grouped data Draw and interpret statistical diagrams	Expand triple brackets Factorise and solve quadratic equations Find the turning point of quadratic graphs Draw and interpret cumulative frequency graphs Draw and interpret statistical diagrams
	Vocabulary and the concepts they link to	Vocabulary and the concepts they link to	Vocabulary and the concepts they link to	Vocabulary and the concepts they link to	Vocabulary and the concepts they link to		Vocabulary and the concepts they link to	
	Compound Exponential Decay Volume Surface Area	Trigonometric ratios (sine, cos, tan) Loci Equidistant	Gradient Parallel Perpendicular Union, Intersection Subset	Compound Measure Rate Simplify Acceleration Cubic	Arithmetic Geometric Bias Proportion Transformation Index/Indices		Expand Factorise Quadratics Frequency Grouped Data (F) Turning Point (H)	
	Summative Assessment	Summative Assessment	Summative Assessment	Summative Assessment	Summative Assessment		Summative Assessment	
		EOT1		EOT2	EOY		Mocks	

	Diversity & development of cultural capital	Diversity & development of cultural capital	Diversity & development of cultural capital	Diversity & development of cultural capital	Diversity & development of cultural capital	Diversity & development of cultural capital
	<p>Investigate how compound interest is used in different countries and cultures (e.g. Islamic finance)</p> <p>Study growth and decay through environmental examples</p>	Use trigonometric ratios to solve problems related to the design and construction of famous architectural structures or art.	<p>Explore how straight-line equations are used in geographical mapping.</p> <p>Use tree diagrams and set notation to model genetic inheritance.</p>	<p>Explore how compound measures are used in global trade and economics, e.g. in international logistics.</p> <p>Investigate how graphs of cubic, reciprocal and exponential functions are used in modelling real-life data, such as population growth and decay of resources.</p>	<p>Explore how arithmetic and geometric sequences are found in nature and architecture.</p> <p>Explore how sampling methods, bias and direct/inverse proportion equations are used in social research to ensure accurate data collection and representation.</p> <p>Use index laws and error intervals in scientific contexts, like calculating the volume of substances or the rate of chemical reactions, where accuracy and precision are crucial.</p>	<p>Use expanding and factorising quadratic equations to solve real-life problems, such as those related to physics (motion and area problems).</p> <p>Explore how statistical diagrams are used in social science or market research to analyse data trends, public opinion and consumer behaviour.</p>
	Cross-curricular opportunities and enrichment	Cross-curricular opportunities and enrichment	Cross-curricular opportunities and enrichment	Cross-curricular opportunities and enrichment	Cross-curricular opportunities and enrichment	Cross-curricular opportunities and enrichment
		<p>Maths Week</p> <p>England</p> <p>Fibonacci Day</p>	<p>UKMT Intermediate Challenge</p> <p>Euler's Number Day</p>	Pi Day	<p>Square Root Day</p> <p>Women in Maths Day</p> <p>National Numeracy Day</p>	<p>My Money Week</p> <p>Pythagoras' Theorem Day</p>