

Curriculum Journey 2025-2025

Subject: Mathematics Year 12

Exam board: Edexcel

Year 12	Half Term 1	Half term 2	Half Term 3	Half Term 4	Half term 5	Half Term 6
Topic	Pure – Transition, Proof by exhaustion, proof by counter example, Laws of indices, Manipulative surds, Solving quadratic equations, sketching graphs, the discriminant, solving simultaneous inequalities. Applied – Quantities and units in mechanics, Kinematics, Measure of location and spread	Pure – Set notation, sketching curves, transforming curves, equation of straight line, equation of a circle, factor theorem, proof by deduction, binomial expansion Applied - Saming and the large data set, probability, forces and Newton's law	Pure – Differentiation, Integration, Trigonometry Applied – Presentation and interpretation of data, statistical distributions	Pure – Exponentials and logarithms differentiation and integration Applied – Kinematics, hypothesis testing	Pure – Vectors, consolidation	Proof by contradictions partial fractions, the modulus function, modelling, transforming curves Applied - Moments
Vocabulary	<ol style="list-style-type: none"> 1. Surd 2. Index 3. Discriminant 4. Quadratic 5. Inequality 6. Proof 7. Counterexample 8. Kinematics 9. Velocity 	<ol style="list-style-type: none"> 1. Set 2. Intersection 3. Union 4. Transformation 5. Gradient 6. Circle equation 7. Factor theorem 8. Binomial 9. Sample 	<ol style="list-style-type: none"> 1. Derivative 2. Gradient function 3. Stationary point 4. Integral 5. Area under curve 6. Sine rule 	<ol style="list-style-type: none"> 1. Exponential 2. Logarithm 3. Natural log (ln) 4. Chain rule 5. Integration by substitution 6. Displacement 7. Velocity 	<ol style="list-style-type: none"> 1. Vector 2. Magnitude 3. Direction 4. Scalar 5. Position vector 6. Column vector 7. Parallel 	<ol style="list-style-type: none"> 1. Contradiction 2. Modulus 3. Partial fraction 4. Rational function 5. Model 6. Transformation 7. Asymptote 8. Moment 9. Force



	10. Standard deviation	10. Probability	7. Cosine rule 8. Frequency density 9. Normal distribution 10. Histogram	8. Acceleration 9. Null hypothesis 10. Critical value	8. Dot product 9. Resultant 10. Proof	10. Perpendicular distance
Assessment	Milestone	Milestone	Milestone	Milestone		Milestone
Links to prior learning	<ul style="list-style-type: none"> <input type="checkbox"/> Rearranging and solving linear and quadratic equations (GCSE Higher) <input type="checkbox"/> Working with indices and surds <input type="checkbox"/> Interpreting graphs of functions (including quadratics) <input type="checkbox"/> Understanding inequality notation <input type="checkbox"/> Applying basic statistical concepts (mean, median, range) <input type="checkbox"/> Understanding speed, distance and time relationships <input type="checkbox"/> Familiarity with units and unit conversions 	<ul style="list-style-type: none"> <input type="checkbox"/> Interpreting and sketching graphs from GCSE <input type="checkbox"/> Rearranging equations and working with coordinates <input type="checkbox"/> Knowledge of basic algebraic factorisation <input type="checkbox"/> Understanding straight-line gradients and intercepts <input type="checkbox"/> Basic probability and data collection methods <input type="checkbox"/> Introduction to Newton's laws of motion at GCSE Physics/Maths <input type="checkbox"/> Working with function notation and transformation language 	<ul style="list-style-type: none"> <input type="checkbox"/> Working with straight-line gradients and rates of change (GCSE) <input type="checkbox"/> Understanding areas and basic properties of curves and shapes <input type="checkbox"/> GCSE trigonometry in right-angled and non-right-angled triangles <input type="checkbox"/> Interpreting charts and tables (bar charts, frequency tables) <input type="checkbox"/> Working with mean, median, and mode 	<ul style="list-style-type: none"> <input type="checkbox"/> Laws of indices from earlier in Year 12 and GCSE <input type="checkbox"/> Previous differentiation and integration techniques <input type="checkbox"/> Kinematics: speed, distance, time and motion graphs (from Year 10/11 Mechanics) <input type="checkbox"/> Interpreting graphs and gradients <input type="checkbox"/> Understanding averages and basic probability from GCSE <input type="checkbox"/> Drawing conclusions from data (GCSE) 	<ul style="list-style-type: none"> <input type="checkbox"/> Vector notation and basic operations from GCSE Higher <input type="checkbox"/> Coordinates and geometric reasoning <input type="checkbox"/> Rearranging equations and applying algebra <input type="checkbox"/> Gradient and direction concepts from straight-line graphs <input type="checkbox"/> Logical reasoning and algebraic manipulation from earlier topics in Year 12 	<ul style="list-style-type: none"> <input type="checkbox"/> Algebraic proof and counterexample from earlier in Year 12 <input type="checkbox"/> Factorising and simplifying rational expressions <input type="checkbox"/> Graph sketching and curve transformations <input type="checkbox"/> Interpreting real-world problems using functions and models <input type="checkbox"/> Understanding of force and moments from GCSE science/mechanics <input type="checkbox"/> Use of trigonometry and geometry to support vector and

			<input type="checkbox"/> Introduction to probability distributions in science or higher-tier GCSE statistics	statistics or science)		turning-force reasoning
Catholic Social Teaching	Encourages the pursuit of truth through logical reasoning and intellectual honesty. Proof and analysis in mathematics reflect our human capacity to think critically and make decisions based on evidence — a responsibility we are called to use wisely and ethically.	Promotes stewardship and integrity through precise use of data and responsible interpretation. The use of logic, deduction and structured reasoning in proofs models the pursuit of truth and clarity — important values both academically and morally.	Encourages thoughtful interpretation of patterns and data, fostering integrity in how information is presented and conclusions are drawn. Emphasises the importance of accuracy and honesty in both communication and analysis.	Highlights the value of rational decision-making based on evidence and truth. Hypothesis testing reinforces ethical responsibility in making fair and honest judgments based on data.	Emphasises clarity, structure, and purpose — mirroring our responsibility to approach problems with discipline and integrity. Mathematical proof and vector precision reflect the order and consistency found in creation.	Encourages careful reasoning and intellectual honesty. Proof by contradiction and modelling require respect for truth and clarity, while the study of moments connects to the responsibility of building safe, balanced, and sustainable systems in the real world.
Careers and Personal Development links	Builds core skills for careers in engineering, data science, physics, actuarial science, economics, and architecture. Also develops personal attributes such as logical thinking, perseverance, and attention to detail — all	Applies directly to careers in data analysis, engineering, computer science, economics, statistics and physics. Develops problem-solving, logical reasoning, and analytical skills vital in decision-making	Supports careers in engineering, data science, medicine, physics, economics, and finance. Reinforces critical thinking, attention to detail, and mathematical	Foundational for careers in physics, engineering, economics, computer science, psychology, and research. Encourages precision, logical reasoning, and critical evaluation	Highly relevant for careers in engineering, physics, architecture, robotics, computer science, and aviation. Builds critical thinking and modelling skills used in	Highly relevant to careers in engineering, mechanics, robotics, physics, and architecture. Strengthens analytical modelling, spatial reasoning, and understanding of physical systems



	vital in problem-solving professions.	and evidence-based careers.	fluency — all of which are essential for success in both academic and applied fields.	— vital skills in professional and academic environments.	technical and scientific disciplines.	— key to technical professions and problem-solving careers.
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