MATHEMATICS Department - Curriculum Information

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	Directed Numbers Number Properties Algebraic Expressions	Order of Operations and Integer Arithmetic Equations	Powers of 10 and Decimal Arithmetic Fraction Operations Averages	Averages Fractions, Decimals and Percentages and Non-Calculator Percentages. Units	Area and Perimeter Angles	Probability Coordinates Statistical Diagrams
Catholic Social Teaching	Care for God's creation Dignity of work and participation Solidarity	Dignity of work and participation The common good	Common good Care for God's creation Dignity of work and participation	Solidarity The option for the poor and vulnerable Care for God's creation	Care for God's creation	The common good Dignity Solidarity
Year 8	Rounding and Estimation Index Laws Circles	Volume Ratio	Highest Common Factor and Lowest Common Multiple Angles in Parallel Lines	Probability and Tree Diagrams Solving Equations Pythagoras Theorem	Nth Term Angles and Pie Charts	Proportion Percentage Change
Catholic Social Teaching	Option for the poor and vulnerable Dignity of work and participation Solidarity	Option for the poor and vulnerable	The common good Care for God's creation Solidarity	Option for the poor and vulnerable Care for God's creation Dignity of work and participation	Care for God's creation Solidarity	Solidarity
Year 9	Standard Form Discrete and Continuous Data Compound Measures	Rounding and Bounds Expanding and Factorising Changing the Subject of a Formula	Shape Transformations Surface Area	Right Angle Trigonometry Linear and Non-Linear Graphs Angles in a Polygon	Venn Diagrams and Set Theory Congruence, Construction and Similarity	Scale Drawings and Bearings
Catholic Social Teaching	Option for the poor and vulnerable The common good	Option for the poor and vulnerable Care for God's creation	Common good Dignity Option for the poor and vulnerable	Solidarity Care for God's creation	Solidarity Option for the poor and vulnerable Care for God's creation	Solidarity Option for the poor and vulnerable
Year 10	**Higher** Whole Number Theory Ratio Powers and Roots Algebraic Expression	**Higher** Algebraic Expressions Fractions	**Higher** Equations Quadratics Angles	**Higher** Angles Area and Perimeter	**Higher** Bearings Pythagoras Trigonometry	**Higher** Probability and Tree Diagrams Decimals
	Foundation Whole Number Theory Ratio Powers and Roots	**Foundation** Algebraic Expressions Fractions	**Foundation** Equations Angles Area and Perimeter	**Foundation** Area and Perimeter Standard Form	**Foundation** Bearings Pythagoras and Trigonometry	**Foundation** Probability and tree Diagrams

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Catholic Social Teaching	Dignity of work and participation Solidarity Care for God's creation	Solidarity Care for God's creation Option for the poor and vulnerable	Dignity of work and participation Option for the poor and vulnerable	Solidarity Option for the poor and vulnerable Common good	Dignity Care for God's creation Option for the poor and vulnerable	Option for the poor and vulnerable Care for God's creation
Year 11 (2022)	**Higher** Plane Isometric Transformations Congruent Triangles Similarity Pythagoras' Theorem	**Higher** Trigonometry Circle Theorems	**Higher** Discrete growth and decay Direct and Inverse proportion Collecting and Displaying Data Analysing Data	**Higher** Interpreting Graphs Algebraic Inequalities Transformations of curves and their equations.	Past Paper Revision Study Leave GCSE Exams	
	Foundation Calculations with ratio Basic Probability & Experiments Combined events and Probability diagrams Powers & Roots Standard Form Plane vector Geometry	**Foundation** Plane Isometric Transformations Congruent Triangles Similarity	**Foundation** Pythagoras' Theorem Trigonometry Discrete growth and decay Direct and Inverse proportion	**Foundation** Collecting and Displaying Data Analysing Data Interpreting Graphs Algebraic Inequalities		
Catholic Social Teaching	Care for God's creation Dignity Option for the poor and vulnerable	Care for God's creation Dignity Solidarity	Option for the poor and vulnerable Care for God's creation	Dignity of work and participation Option for the poor and vulnerable.		

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 12	Basic algebraic manipulation, indices and surds (3) **Binomial expansion (4)** **Quantities and units in mechanics** Introduction to mathematical modelling and standard S.I units of length, time and mass. Definitions of force, velocity, speed, acceleration, weight and displacement. Vector and scalar quantities (3) Simultaneous equations – linear and quadratic. Graphs (Cubic, **Quartic** Reciprocal) (3) Quadratic functions – factorising, solving, graphs and the **discriminant (3)** Statistics **Large data set** **Measures of location** **Coding** **Statistical distributions (4)** Vectors Definitions, magnitude/direction, addition & scalar multi. (2)	**Differentiation** **Definition** **Differentiating polynomials** **Second derivatives** **Gradients** **Tangents** **Normals** **Maxima and minima (6)** Coordinate geometry in the (x, y) plane. **Straight line** Parallel/perpendicular Length and area problems Circles **Equation of a circle** **Geometric problems on a grid (4)** Vectors Position vectors Distance between two points Geometric problems (3) **Algebraic division** **Factor theorem** **Proof (4)**	Mechanics: kinematics 1 Graphical representation of velocity, acceleration and displacement **Motion in a straight line under** **constant acceleration; suvat formulae, vertical motion under gravity (4)** **Integration** **Definition as opposite of differentiation, indefinite integrals of x^n** **Definite integrals and areas under curves (4)** Statistics Probability: mutually exclusive events; independent events **Hypothesis testing; language;** **significance levels; hypothesis** **tests involving the binomial distribution (4)** Transformations Transforming graph F(x) notation (4)	**Integration** **Definition as opposite of differentiation, indefinite integrals of x^n** **Definite integrals and areas under curves (8)** **Forces and Newton's laws** **Newton's first law, force diagrams, equilibrium, introductions to i, j system.** **Newton's 2nd law, connected** **particles; Newton's 3rd law: equilibrium, problems involving** **smooth pulleys (8)** Inequalities Linear and quadratic including graphical solutions (4) Trigonometry Trig ratios and graphs (8)	**Trigonometric identities and equations (10)** Mechanics **Variable force** **Calculus to determine rates of change for kinematics** **Use of integration for kinematics problems (4)** **Exponentials and logarithms** **Exponential functions and** **natural logarithms (10)** Statistics Interpretation of diagrams, including scatter graphs **Regression lines** **Recognise and interpret outliers** **Draw conclusions from statistical problems (3)**	**Year 2 – Series and sequences** **Arithmetic and geometric progressions** **Sigma notation** **Recurrence and iterations (5)** Year 2 - Simplifying algebraic fractions Partial fractions (5) Year 12 catch up (2) **Year 2 – Numerical methods** **Location of roots** **Solving by iterative methods** **Newton-Raphson method (5)**
Catholic Social Teaching	Solidarity	Dignity	Care for God's creation	Dignity	Dignity in work and participation	Care for God's creation

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Year 13	Trigonometry Radians, arcs and sectors Small angles (5) Trigonometry Secant, cosecant, cotangent Inverse trig functions Compound and double angle formulae R cos (x ± α) or R sin (x ± α) Proving trig identities (15) Vectors Use of vectors in 3 dimensions Knowledge of column vectors and **i, j** and unit vectors (4)	Parametric equations (4) Differentiation Differentiating sin x and cos x from first principles Differentiating exponentials and logarithms Differentiating products, quotients, implicit and parametric functions Second derivatives Rates of change problems (16) Proof Including proof by deduction and proof by contradiction (3) Transformations Modelling with transformations (4) Modulus function Composite and inverse functions (4)	The Normal distribution Understand and use the Normal distribution Use the Normal distribution as an approximation to the binomial distribution Select the appropriate Distribution Statistical hypothesis testing for the mean of the Normal distribution (14) Integration Integrating (Including x^n when x = -1), exponentials and trigonometric functions (4) Forces – resolving forces Further kinematics Constant acceleration (Equations of motion in 2D; the **i, j** system) Applications of kinematics – projectiles (10)	Integration Using the reverse of differentiation and trigonometric identities Integration by substitution Integration by parts Use of partial fractions Areas under graphs or between two curves The trapezium rule Differential equations (22) Forces at any angle; Friction forces including the coefficient of friction Application of forces: equilibrium and statics of a particle, dynamics of a particle (9)	Probability Using set notation Assumptions Regression and correlation Change of variable Correlation coefficients Statistical hypothesis testing for zero correlation (10) Further kinematics: variable acceleration and use of calculus Moments Application of forces (4) The Binomial theorem Expanding $(a + bx)^n$ for rational n; knowledge of range of validity Expansion of functions using partial fractions.	
Catholic Social Teaching	Solidarity	Care for God's creation	Dignity	Dignity of work and participation	Solidarity	