CARDINAL NEWMAN CATHOLIC SCHOOL

Cardinal Newman School: Medium Term Plan Maths Year 10 HIGHER

Overview: Purpose? People can feel that they are not good at maths when they are learning the wrong topics, or when they move on too quickly. Learning should be seen as a journey and we can only learn new topics when we have a secure foundation in the topics that come before them.
Knowledge: Students will learn Maths content required for GCSE Maths.
Skills: Students will be accessing questions based on the content covering all 3 AOs: AO1: Use and apply standard techniques, AO2: Reason, interpret and communicate mathematically, AO3: Solve problems within mathematics and in other contexts
End Point: Pitstops are provided for each stage before moving onto the next. 3 main Maths assessments (cumulative based on the content taught from September) check students progress throughout the year.

Year 10	Autumn Term				
Topics/ Skills	**Prior Learning:**	**Next Steps:**	**National Specification links:**	**Key Words/ Vocabulary:**	**Mathswatch videos:??**
Number: • Product rule for counting • Estimation • Error intervals • Prime factors, LCM, HCF • Indices • Standard form • Reverse percentages	KS3 Number skills	• Fractional and negative indices • Surds • Repeated percentage change	N4 N5 N7 N9 N14 N15	Product, percentage increase/decrease/profit, estimate, significant figure, prime factors, Lowest Common Multiple, Highest Common Factor, index/power, interest, standard form, ordinary number, reverse percentages, multiplier	Clips: 91 155a 78 79 80 82 154 188 83 200a 110
Algebra: • Straight line graphs • Solving equations • Expanding and factorising • Sequences (nth term) • Inequalities • Forming and solving equations • Real life and distance time graphs	KS3 Algebra skills	• Expanding and factorising quadratics • Solving quadratics by factorising • Drawing quadratic graphs • Drawing cubic/reciprocal graphs • Changing the subject of a formula • Gradient of a line • Equation of a line • Simultaneous equations	A3 A4 A9 A10 A12 A14 A17 A25 A21 A22	Coordinate, table of values, linear graph, equation, variable, solve, expand, factorise, sequence, nth term, inequality, integer	96, 159a, 159b 135a 93 134a 94 102, 103 138, 139 137 143

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		(algebraically and graphically)			
Ratio and proportion • Percentage change • Compound interest and depreciation • Converting units and conversion graphs • Scale drawings • Exchange rates • Ratio • Speed, density and pressure	KS3 Ratio and proportion skills	• Writing ratio as a fraction or linear function • Direct and inverse proportion	R1 R2 R4 R5 R9 R11 R16	Metric, imperial, scale, exchange rate, ratio	109 164 112 105 106, 165a 142a, 142b, 142c
ometry and Measures: • Area and circumference of circles • Plans and elevations • Transformations • Pythagoras Theorem • Surface area of a prism • Volume of a prism • Cylinders (volume and surface area)	KS3 Geometry and Measures skills	• Angles in parallel lines • Angles in polygons • Similar shapes (lengths) • Loci and construction • Bearings • Vectors • Sector areas and arc lengths • Spheres and cones • SOH CAH TOA trigonometry • Exact trig vales	G6 G7 G8 G12 G13 G14 G16 G17 G20	Area, radius, diameter, circumference, plan, elevation, transformation, reflection, rotation, translation, enlargement, Pythagoras, hypotenuse, prism, surface area, volume, cylinder, compound measure, speed, density, pressure, distance-time graph	117, 118 51 48, 49, 50, 148, 182 150a, 150c 114a, 114b 115, 119
Data (Probability and Statistics) • Combined (reverse) mean • Stem and leaf diagrams • Frequency polygons • Frequency trees • Two-way tables • Pie charts • Scatter graphs • Averages from frequency tables	KS3 Probability and Statistics skills	• Probability trees • Venn diagrams and simple set notation	S2 S4 S6 P1 P3 P9	Mean, mode, media, range, stem and leaf diagram, frequency polygon, frequency tree, two-way table, pie chart, scatter diagram, correlation, line of best fit, estimation, frequency table, probability, relative frequency	62 128b 65b 57 61 128a 129 130a, 130b 59, 204

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• Probability (relative frequency)					
Pitstops and Assessments: Stage 3_4 Pitstop, Stage 5 Pitstop, Stage 6 Pitstop, Autumn Assessment, Stage 7 Pitstop					

Year 10	**Spring Term**				
Topics/ Skills	**Prior Learning:**	**Next Steps:**	**National Specification links:**	**Key Words/ Vocabulary:**	**Mathswatch videos:??**
Algebra: • Expanding and factorising quadratics • Solving quadratics by factorising • Drawing quadratic graphs • Drawing cubic/reciprocal graphs • Changing the subject of a formula • Gradient of a line • Equation of a line • Simultaneous equations (algebraically and graphically)	• Straight line graphs • Solving equations • Expanding and factorising • Sequences (nth term) • Inequalities • Forming and solving equations • Real life and distance time graphs	• Recurring decimals to fractions • Expanding triple brackets • Parallel and perpendicular lines • Inequalities on graphs • Rearranging harder formulae	A4 A5 A8 A9 A10 A11 A12 A18 A19 A21	Expanding, factorising, quadratic, solve, graph, subject, formula, gradient, y-intercept, simultaneous equations	134b, 157, 192 98 161 136, 190 97 159a, 159b 140, 162
Ratio and proportion: • Writing ratio as a fraction or linear function • Direct and inverse proportion	• Converting units and conversion graphs • Scale drawings • Exchange rates • Ratio • Speed, density and pressure	• Direct and inverse proportion algebraically	R6 R8 R10	Ratio, fraction, function, proportion	165c 199
Geometry and Measures: • Angles in parallel lines • Angles in polygons • Similar shapes (lengths) • Loci and construction	• Area and circumference of circles • Plans and elevations	• Enlarging with negative scale factors	G1 G2 G3 G6 G7	Parallel, corresponding, alternate, co-interior, polygon, interior, exterior, similar shapes, scale factor, loci,	120 123 144 145a, 145b, 145c, 146

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• Bearings • Vectors • Sector areas and arc lengths • Spheres and cones • SOH CAH TOA trigonometry • Exact trig vales	• Transformations • Pythagoras Theorem • Surface area of a prism • Volume of a prism • Cylinders (volume and surface area)	• Similar shapes (Area and volume)	G15 G17 G18 G19 G20 G21 G24 G25	bearing, column vector, area, arc length, sector, sphere, cone, trigonometry	124 174, 219 167 169, 171 168 173
Data (Probability and Statistics): • Probability trees • Venn diagrams and simple set notation	• Combined (reverse) mean • Stem and leaf diagrams • Frequency polygons • Frequency trees • Two-way tables • Pie charts • Scatter graphs • Averages from frequency tables • Probability (relative frequency)	• Cumulative frequency graphs • Box plots	P6 P8 P9	Probability tree, Venn diagram, intersection, union, complement	151, 175 127a, 127b, 185
Pitstops and Assessments: Stage 8 Pitstop, Stage 9a Pitstop, Spring Assessment, Stage 9b Pitstop					

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Year 10	Summer Term				
Topics/ Skills	**Prior Learning:**	**Next Steps:**	**National Specification links:**	**Key Words/ Vocabulary:**	**Mathswatch videos:??**
Number: • Fractional and negative indices • Surds • Recurring decimals to fractions	• Product rule for counting • Percentage change • Estimation • Error intervals • Prime factors, LCM, HCF • Indices • Compound interest and depreciation • Standard form • Reverse percentages	• Bounds	N7 N8 N10	Index, surd, expand, simplify, rationalise, multiplier	154, 188 207a, 207b, 207c 177, 189
Algebra: • Expanding triple brackets • Parallel and perpendicular lines • Inequalities on graphs • Rearranging harder formulae	• Expanding and factorising quadratics • Solving quadratics by factorising • Drawing quadratic graphs • Drawing cubic/reciprocal graphs • Changing the subject of a formula • Gradient of a line • Equation of a line • Simultaneous equations (algebraically and graphically)	• Quadratic formula • Factorising harder quadratics • Functions • Iteration • Nth term of a quadratic sequence • Algebraic fractions • Completing the square • Area of any triangle • Quadratic simultaneous equations • Quadratic inequalities • Perpendicular lines and the equation of a tangent	A3 A4 A5 A9 A22	Recurring, expand, parallel, perpendicular, reciprocal, inequality, change the subject/rearrange	178 97, 159b, 208 198 190

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		• Transforming graphs			
Ratio and proportion: • Direct and inverse proportion algebraically • Repeated percentage change	• Writing ratio as a fraction or linear function • Direct and inverse proportion		R9 R10 R13 R14	Proportion, direct, inverse, constant of proportionality	199 109, 164
Geometry and Measures: • Enlarging with negative scale factors • Similar shapes (Area and volume)	• Angles in parallel lines • Angles in polygons • Similar shapes (lengths) • Loci and construction • Bearings • Vectors • Sector areas and arc lengths • Spheres and cones • SOH CAH TOA trigonometry • Exact trig vales	• Circle Theorems • Sine rule • Cosine rule • 3D trigonometry	G7 G19	Enlarge, scale factor, similar, scale factor, area, volume	181a, 181b 201
Data (Probability and Statistics): • Cumulative frequency graphs • Box plots	• Probability trees • Venn diagrams and simple set notation	• Histograms • Conditional probability • Probability equation questions	S3 S4	Cumulative, median, lower quartile, upper quartile, inter quartile range, box plot	186 187
Pitstops and Assessments: Stage 10a Pitstop, Stage 10b Pitstop, Stage 11a Pitstop, Summer Assessment, Stage 11b Pitstop					