Mathematics Department Curriculum Overview 2023-24

Year	Michaelmas 1	Michaelmas 2	Lent 1	Lent 2	Trinity 1	Trinity 2
7	Topic: Introduction to Algebra Substantive Knowledge: Simplifying expressions, understanding 'term', expanding and factorising, substitution and solving simple equations Disciplinary Knowledge: Basic ideas of manipulating algebraic expressions	Topic: Algebra and Number Substantive Knowledge: Solving equations, simplifying fractions, arithmetic of fractions. Percentages. Disciplinary Knowledge: Understand how to convert between fractions, decimals and percentages to use efficient methods to calculate.	Topic: Number and Shape Substantive Knowledge: HCF, LCM and Venn diagrams, metric units of measure and conversions, angle facts and how to use to solve problems. Disciplinary Knowledge: Build on number skills and problem-solving skills developed in Primary school.	Topic: Shape and data Substantive Knowledge: Areas and perimeters, probability, averages and range Disciplinary Knowledge: Build on shape knowledge from primary school and introduce further ideas in shape and data.	Topic: Graphs and volumes Substantive Knowledge: Co-ordinates, volumes, straight line graphs, bearings, BODMAS Disciplinary Knowledge: Build on knowledge of co-ordinates to plot graphs, draw bearings and calculate volumes of solids.	Topic: Review and Pythagoras' Theorem Substantive Knowledge: Recap of the work covered so far this year. Introduction to Pythagoras' Theorem Disciplinary Knowledge: Review end of year exams and consolidate knowledge of topics not answered well.
	Key Assessment Points: Week 6 – assessment on all topics in weeks 1-5	**Key Assessment Points:** Week 12 – assessment on all topics from week 1	**Key Assessment Points:** Week 18 – test on all topics from weeks 1-18	**Key Assessment Points:** Week 24 – test on all topics from weeks 1-24	**Key Assessment Points:** Week 30 – test on all topics from weeks 1-30	**Key Assessment Points:** End of year exams covering all topics this year.
8	Topic: Algebra Substantive Knowledge: Building on algebra learnt in Year 7 and develop further such as factorising quadratics Disciplinary Knowledge: Develop knowledge of manipulating algebraic terms and solving more difficult equations	Topic: Number Substantive Knowledge: Standard form, estimation and rounding, fractions, percentages Disciplinary Knowledge: Standard form, estimation and rounding, fractions, percentages Build on number skills developed in Year 7.	Topic: Number Substantive Knowledge: Ratio and Proportion, Probability, Polygons and Areas. Disciplinary Knowledge: Build on number skills developed in Year 7 and during the last 2 terms.	Topic: Algebra and shape Substantive Knowledge: Sequences, two-way tables, inequalities, Pythagoras' Theorem Disciplinary Knowledge: Build on algebra and shape skills developed in Year 7 and during the last 3 terms.	Topic: Transformations, y=mx+c and averages Substantive Knowledge: Equations of straight lines, plotting graphs, transformations, averages, volumes, Simultaneous equations. Disciplinary Knowledge: Build on algebra and shape skills developed in Year 7 and during the last 4 terms.	Topic: Review and constructions. Substantive Knowledge: Consolidate knowledge of work covered this year. Disciplinary Knowledge: Build on all skills developed in Year 7 and during the last 5 terms. Review end of year exams and consolidate knowledge of topics not answered well.
	Key Assessment Points: Week 6 – All topics from weeks 1-5	**Key Assessment Points:** Week 12 – test on all topics from weeks 1-12	**Key Assessment Points:** Week 18 – test on all topics from weeks 1-18	**Key Assessment Points:** Week 24 – test on all topics from weeks 1-24	**Key Assessment Points:** Week 30 – test on all topics from weeks 1-30	**Key Assessment Points:**

						End of year exams covering all topics this year.
9	Topic: Algebra Substantive Knowledge: Factorising quadratics, solving equations including quadratics, rearranging formulae, nth term. Disciplinary Knowledge: Build on knowledge from previous two years.	Topic: Algebra, Shape, Probability Substantive Knowledge: Simultaneous equations, probability, angles, trigonometry. Disciplinary Knowledge: Build on knowledge from previous two years.	Topic: Shape, Number Substantive Knowledge: Transformations, Congruent triangles, Area of shapes including circles and sectors. Percentage increase, decrease including repeated change. Travel graphs Disciplinary Knowledge: Build on knowledge from previous two years.	Topic: Number and data Substantive Knowledge: Ratio and Proportion, reverse percentages, averages from a table, cumulative frequency, volume, Pythagoras Disciplinary Knowledge: Build on knowledge from previous two years.	Topic: Shape Substantive Knowledge: Trigonometry, spheres and cones and general revision of topics for end of year assessment. Disciplinary Knowledge: Build on knowledge from previous two years.	Topic: Shape Substantive Knowledge: Similar shapes, scale factors of length, area and volume, introduction to topics in the GCSE. Disciplinary Knowledge: Build on knowledge from previous two years. Review end of year exams and consolidate knowledge of topics not answered well.
	Key Assessment Points: Week 6 – test on all topics from weeks 1-5	**Key Assessment Points:** Week 12 – test on all topics from weeks 1-12	**Key Assessment Points:** Week 18 – test on all topics from weeks 1-18	**Key Assessment Points:** Week 24 – test on all topics from weeks 1-24	**Key Assessment Points:** Week 30 – test on all topics from weeks 1-30	**Key Assessment Points:** End of year exams covering all topics this year.
10	Topic: Algebra Substantive Knowledge: Higher: Same as foundation plus quadratic inequalities, completing the square Foundation: Factorising quadratics, solving equations including quadratics, rearranging formulae, nth term, solving and drawing inequalities Disciplinary Knowledge:	Topic: Algebra Substantive Knowledge: Higher: Sketching regions, functions, parallel and perpendicular lines, Differentiation, standard form, indices and trigonometry Foundation: Simultaneous equations indices and standard form, graphs including y=mx+c, finding gradients and using real-life graphs. Disciplinary Knowledge:	Topic: Number Substantive Knowledge: Higher: Surds, arithmetic sequences, direct and inverse proportion, trig graphs and transformations of graphs. Foundation: Shading regions, BODMAS, fractions, percentages, products of primes, HCF and LCM, Venn diagrams and set notation	Topic: Data Substantive Knowledge: Higher: Histograms, set notation, mean from a table, cumulative frequency, dual mean, exchange rates, sequences. Foundation: Ratio and proportion, estimation, bounds, money and time, sequences, transformations, angles and polygons.	Topic: Shape Substantive Knowledge: Higher: Bounds and transformations, sine rule, cosine rule, vectors, similar shapes and solids Foundation: Congruence, area, surface area, volume, scale factors, Pythagoras, trigonometry, bearings, circles.	Topic: Shape Substantive Knowledge: Higher: Tree diagrams, circle theorems, volume, surface area, cones, spheres, frustrums. Foundation: Data, averages from tables, probability, Pythagoras, trigonometry, bearings, constructions Disciplinary Knowledge: Build on knowledge from previous 3 years. Review end of year exams and

	Build on knowledge from previous 3 years.	Build on knowledge from previous 3 years.	Disciplinary Knowledge: Build on knowledge from previous 3 years.	Disciplinary Knowledge: Build on knowledge from previous 3 years.	Disciplinary Knowledge: Build on knowledge from previous 3 years.	consolidate knowledge of topics not answered well.
	Key Assessment Points: Week 6 – test on all topics from weeks 1-5	**Key Assessment Points:** Week 12 – test on all topics from weeks 1-12	**Key Assessment Points:** Week 18 – test on all topics from weeks 1-18	**Key Assessment Points:** Week 24 – IGCSE exam covering most of the topics so far	**Key Assessment Points:** Week 30 – test on all topics from weeks 1-30	**Key Assessment Points:** End of year exams covering all topics this year.
11	Topic: Higher - Circle theorems, graphs, gradients and equations of straight lines Foundation – algebra and revision for early entry iGCSE in November Substantive Knowledge: Higher - Learn the different circle theorems and put into practise along with finding gradients and equations of straight lines and recognising types of graphs. Differentiation as gradient function and use in kinematics. Foundation – as above Disciplinary Knowledge: Build on the above and practise in context of the exam.	Topic: Higher: Inequalities, quadratic simultaneous equations Foundation: Revision for iGCSE then further work on Algebra and number. Substantive Knowledge: Higher – Learn key facts and methods in above topics. Foundation – Recap and revision of key facts and how to apply knowledge to answer exam questions. Disciplinary Knowledge: Build on the above and practise in context of the exam.	Topic: Higher: Vectors, Substantive Knowledge: Foundation: Revision for iGCSE then further work on Algebra and number. Higher: Rest of content completed during this term and revision of all topics started. Disciplinary Knowledge: Build on the content from the last four years and how to apply the correct skills and methods to solve problems.	Topic: Revision Substantive Knowledge: Foundation and Higher – revise all topics and work through past GCSE papers. Disciplinary Knowledge: Build on the content from the last four years and how to apply the correct skills and methods to solve problems.	Topic: Revision Substantive Knowledge: Foundation and Higher – revise all topics and work through past GCSE papers. Disciplinary Knowledge: Build on the content from the last four years and how to apply the correct skills and methods to solve problems.	Topic: Revision Substantive Knowledge: Foundation and Higher – revise all topics and work through past GCSE papers. Disciplinary Knowledge: Build on the content from the last four years and how to apply the correct skills and methods to solve problems.
	Key Assessment Points: Week 6 – HIgher: test on all topics from weeks 1-5 Foundation – Full mock iGCSE paper	**Key Assessment Points:** Week 8 – Foundation: early entry iGCSE paper. Week 12: test on all topics from weeks 1-12	**Key Assessment Points:** Mock exam papers	**Key Assessment Points** Regular past papers in this term	**Key Assessment Points:** Regular past papers in this term	**Key Assessment Points:** GCSE

12	Topic: Pure and applied topics both in Maths (Book 1) and Further Maths (CP1) Substantive Knowledge: Algebra from GCSE level including quadratics, surds, simultaneous equations. FM – intro to complex numbers, matrices, series, Vectors Disciplinary Knowledge: How to apply the above to exam style questions	Topic: Pure and applied topics both in Maths (Book 1) and Further Maths (CP1) Substantive Knowledge: Maths – Circles, trig, FM – Roots of polynomials, Proof by induction. Then start on FP1 – Vectors, Inequalities Disciplinary Knowledge: How to apply the above to exam style questions	Topic: Pure and applied topics both in Maths and Further Maths Substantive Knowledge: Maths - FM – Conics, the t-formulae, numerical methods. Start FS1 book. Disciplinary Knowledge: How to apply the above to exam style questions	Topic: Pure and applied topics both in Maths and Further Maths Substantive Knowledge: Maths - FM – Differentiation and integration from Y13 Pure book. FS1. Disciplinary Knowledge: How to apply the above to exam style questions	Topic: Pure and applied topics both in Maths and Further Maths Substantive Knowledge: Maths - FM - Review all topics covered over the year in preparation for mocks. Disciplinary Knowledge: How to apply the above to exam style questions	Topic: Pure and applied topics both in Maths and Further Maths Substantive Knowledge: Maths - FM - Differentiation, integration, trig from year 13 book. FP1 conics 2. Disciplinary Knowledge: How to apply the above to exam style questions
	Key Assessment Points: Week 6 – test on algebra and introductory topics from Book 1. FM test on matrices and series.	**Key Assessment Points:** Mini mocks during week 10 covering all content so far in Maths. CP1 AS paper for FM.	**Key Assessment Points:** Week 18 – test on all topics from weeks 1-18	**Key Assessment Points:** Week 6 – test on all topics from weeks 1-5	**Key Assessment Points:** End of year 12 mocks	**Key Assessment Points:** Resit mocks
13	Topic: Pure and applied topics both in Maths and Further Maths Substantive Knowledge: Maths – partial fractions, binomial and recap of work from the summer. Integration, Trig FM- conics, complex numbers, further integration, volumes of revolution Disciplinary Knowledge:	Topic: Pure and applied topics both in Maths and Further Maths Substantive Knowledge: Maths – Trig and modelling, sequences and series, parametric equations FM – Series expansion, Polar coordinates, hyperbolic functions, differential equations	Topic: Pure and applied topics both in Maths and Further Maths Substantive Knowledge: Maths – differentiation and integration FM – Differential equations, Taylor series, Further Calculus, Further Stats 1. Disciplinary Knowledge:	Topic: Pure and applied topics both in Maths and Further Maths Substantive Knowledge: Maths – Numerical methods, vectors FM – Numerical methods, reducible differential equations, FS1 Disciplinary Knowledge:	Topic: Pure and applied topics both in Maths and Further Maths Substantive Knowledge: REVISION Disciplinary Knowledge: How to apply the above to exam style questions	Topic: Pure and applied topics both in Maths and Further Maths Substantive Knowledge: REVISION Disciplinary Knowledge: How to apply the above to exam style questions

Developing strategies to answer exam style questions.	FP1 – recap t-formulae. Disciplinary Knowledge: How to apply the above to exam style questions	How to apply the above to exam style questions	How to apply the above to exam style questions		
Key Assessment Points: Week 5 - Maths assessment on Partial fractions, Binomial expansion and functions. Further assessment on conics and DeMoivre's theorem.	**Key Assessment Points:** Maths – All functions work, Binomial, partial fractions, all work from both books so far in preparation for mocks. Stats and Mechanics too. FM – AS paper on CP1 during week 9. Assessment of CP2 topics to prepare for mocks.	**Key Assessment Points:** **January – mock papers for both Maths and FM**	**Key Assessment Points:** **Revision and past papers**	**Key Assessment Points:** **Revision and past papers**	**Key Assessment Points: A-Levels**