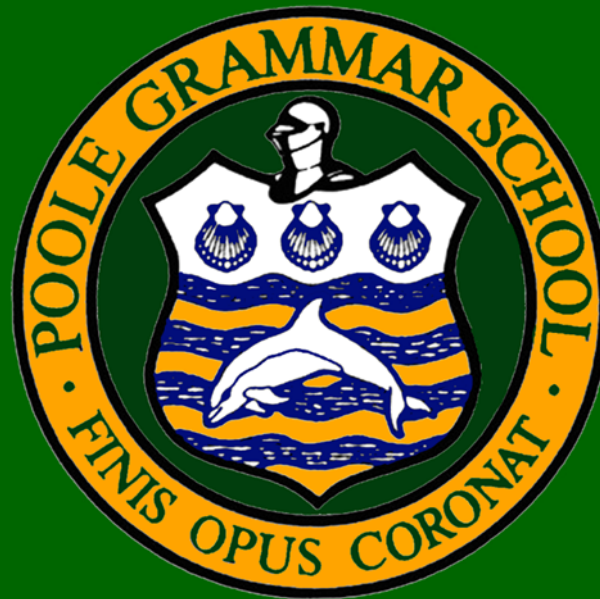# Poole Grammar School - Key Stage 3
(Year 7, Year 8 & Year 9)

MATHEMATICS

'Meeting expectations' criteria, programme of study and curriculum content

Key Stage 3 Mathematics 'meeting expectations' descriptors

	Year 7	Year 8	Year 9
Procedural Fluency	Correctly recall most key knowledge rapidly and accurately. They remember most of the material covered in Y6 of the NC. For example, such as multiplication tables, angle properties and essential vocabulary. Answer most routine questions from Number, Algebra, Statistics and Shape. Students are meeting expectations in the way they recall such key knowledge in assessments	Correctly recall and apply with confidence most of the key knowledge from Y7 and some of the new key knowledge in Y8. This is identified in the scheme of work. Students can solve most routine questions relating to topics in the Y8 scheme of work. They are meeting academic expectations in the way they recall and apply such key knowledge in homework and assessments	Correctly recall and apply with confidence all of the key knowledge from Y8 and some of the new key knowledge in Y9 as defined in the Programme of study. Students can solve most routine questions relating to topics in the Year 9 scheme of work. They are meeting academic expectations in the way they recall and apply such key knowledge in homework and end of half term assessments. Students' ability to develop self- help strategies to help them remember is also evolving
Reasoning	Students are able to explain their methods of solution Their work uses correct mathematical language and "grammar" in a mostly correct way. They convert this into sound performances in end of half term assessments	Students are using more sophisticated mathematical language in their discussions and written work. As their knowledge is growing they are able to connect important concepts from different topic areas. For example, they can apply properties number in an algebraic context	Students now have a wider range of mathematics to master. They are expected to be more mature in the way they revise and structure their learning around important concepts. This becomes evident from the way they connect topics and their use of correct language in explanations. It also comes through in written work and E O H T Assessments
Problem Solving	Pupils are beginning to solve non-routine problems by identifying relevant mathematical skills. They succeed on most routine questions and try to solve non-routine questions with partial success	The level of challenge in non-routine problems continues to evolve. Students are meeting expectations by succeeding on almost all routine questions and solving most non-routine questions successfully. Our expectation is that their ability to do this continues to grow	Pupils' problem-solving skill should now be reaching grade 5 GCSE standard if they are meeting expectations. This will mean that they can make relevant mathematical connections more independently and from across different areas of mathematics. They succeed on all routine questions and solve almost all non-routine questions successfully

Programme of study for Year 7 Mathematics

Autumn term	Spring term	Summer term
Theme 1 **Number (1)** (7 weeks)	Theme 4 **Number (2)** (5 weeks) Theme 5 **Geometry (2)** (1 week)	Theme 7 **Statistics and probability** (2 weeks) Theme 8 **Geometry (3)** (3 weeks)
HALF TERM HOLIDAY		
Theme 2 **Algebra** (5 weeks) Theme 3 **Geometry** (2 weeks)	Theme 6 **Sequences and graphs** (5 weeks) Theme 7 **Statistics and probability** (1 week)	Theme 9 **Statistics and probability (2)** (6 weeks)

Curriculum content for Year 7 Mathematics

Theme	Content	Assessment
Theme 1 **Number (1)** (7 weeks)	Multiples, factors, primes (divisibility rules); Prime Factor trees, LCM, HCF (including from Venn); Negative numbers four operations; Fractions: mixed / improper; comparing fractions (common denominator), fractions of amounts, add/subtract, multiply, divide by using the reciprocal Include all four operations with mixed numbers.	
Theme 2 **Algebra** (5 weeks)	Substitute into 1 and 2 step expressions; Collect like terms; Multiply out and factorise single brackets; Addition and subtraction laws for indices.	
Theme 3 **Geometry** (2 weeks)	Perimeter of rectilinear shapes, area of rectangles, parallelograms, triangles and trapezia. Area/perimeter of compound shapes; Prisms, faces, edges, vertices, drawing & sketching nets; SA of cubes, cuboids, triangular prisms; Volume cubes, cuboids.	
Theme 4 **Number (2)** (5 weeks)	Multiply & divide decimals; Standard form: converting both ways; Round to powers of 10, decimal places, significant figures; Convert between metric units.	
Theme 5 **Geometry (2)** (1 week)	Circumference and area of circles, quarter circles, semicircles.	
Theme 6 **Sequences & graphs** (5 weeks)	Sequences: diagrams, linear/non-linear. Triangular, square, cube, the Fibonacci seq. Term-to-term rule. nth term of linear; Coordinates. Find final vertex of shape; Know lines parallel to axis, $y = x$ and $y = -x$; Plot graphs for lines in form $y=mx+c$; Find intersection; Link to linear sequences. Link $y=kx$ to proportion.	
Theme 7 **Statistics & probability** (3 weeks)	Probability: Sample space for single event. P() notation. Do probability experiment, calculating relative frequencies; Averages - mean, median, mode and range. When to use. Comparing distributions. Mean, mode and range from frequency tables (but not grouped frequency table).	
Theme 8 **Geometry (3)** (3 weeks)	Symmetry, transformations (all four types). Enlargement only with positive integer scale factor. No combinations of transformations; Angle facts: at a point, on a straight line, vertically opposite, triangles, quads, isosceles triangles; Parallel lines: Alternate, corresponding (not co-interior) Special quadrilaterals and properties.	
Theme 9 **Statistics & probability (2)** (6 weeks)	Data: qualitative, quantitative, discrete, continuous; Vertical line charts, pictograms, bar charts, Pie charts; Scatter diagrams, correlation, lines of best fit.	

K = Knowledge / U = Understanding / S = Skills

Programme of study for Year 8 MATHEMATICS

Autumn term	Spring term	Summer term
Working with numbers Solving, substituting and rearranging Algebra Consolidation of number	Probability Area and Angle Linear Graphs	Using Averages Real life Graphs and Charts
HALF TERM HOLIDAY		
Sequences Proportionality and ratio Working with scales and angles Consolidation of number	Curved Graphs Consolidation of number	Harder Algebra Constructions Exam preparation

Curriculum content for Year 8 Mathematics

Theme	Content	Assessment
Theme 1 **Working with numbers** (7 weeks)	**Expand/Factorise:** Revise single brackets and simplify. **Indices**: Revise laws for multiplication and division Introduce negative and fractional powers in the context of laws. Standard form: conversions and four operations. Rounding to significant figures, estimating. Pythagoras: Connect with magnitude of vectors; speed. Percentages: x out of y as a %, find x% of y, outcome of % increase / decrease. Convert between decimals, fractions and %: Banking: Interest etc.	End of topic test
Theme 2 **Algebra, sequences, proportionality, ratio, scales & angles** (6 weeks)	**Algebra** Revise: solve equations including unknowns on both sides. Solve linear equations with fractional coefficients. Linear inequalities & number line representation. Substitute into formulae. Derive formulae. Rearrange formulae in simple cases. Nth term of linear sequence. **Proportion –** recipe questions. Ratio: simplifying, sharing, comparing with fractions, proportional reasoning [Chef/Cook/catering recipe scaling up. Engineering: Concrete mixtures] **Geometry and measures:** bearings and scale drawing [Design/Architecture]	End of topic test
Theme 3 **Probability** (2 weeks)	Probability & relative frequency, sample space diagrams, listing outcomes [Actuaries (Risk etc)]	End of topic test
Theme 4 **Area, angle and Volume** (5 weeks)	Shape: revise angles – basic facts, parallel lines. 3 letter naming. Interior/exterior angles of polygons and tessellation. Areas of triangle, parallelogram, trapezium, compound shapes Circumference and area of circles. Arc length, sector area. Surface area/volume of cuboids. Density and Compound measures.	End of topic test
Theme 5 **Linear & curved graphs** (4 weeks)	Revise: plot graphs in form y = mx + c. Plot graphs for implicit functions (e.g. ay + bx = 0, y + bx + c = 0) Plot curved graphs ($y=x^2$; $y = 3x^2+4$; $y=x^3$). Gradient and intercept real life interpretation of gradient as a constant rate of chance. Equation of a line parallel to L with given y-intercept. Simultaneous equations graphically and by elimination. Mathematical modelling: Intersection of linear cost-time graphs. What examples of linear growth can we find in Real Life?	End of topic test
Theme 6 **Consolidation of number and Trigonometry** (2 weeks)	Revise fractions. Four operations, reciprocal. Cancel common factors before multiplying. Taking the reciprocal is a self-inverse operation like multiplying by – 1. Trigonometry (include bearings questions) [Engineering, Conservatory roof design etc].	End of topic test
Theme 7 **Using averages** (3 weeks)	Averages: revise finding from lists. Revise finding mean/mode/range from frequency table. Median from frequency table. Estimated mean, modal class, median class from grouped. CF graphs to find median quartiles, IQR. Box plots.	End of topic test
Theme 8 **Real-life charts & graphs** (3 weeks)	Revise: Bar, Pie, scatter (best fit & correlation). Time series. Look for examples of misleading statistical graphs and statements in the media. Discuss why they are misleading. Is it due to scales on the axes that make growth look better? Is it a Pie chart with no indication of population size?	End of topic test
Theme 9 **Harder algebra & constructions** (4 weeks)	Expand double brackets, simplify easy algebraic fractions, add/subtract algebraic fractions. Geometry: Constructions and Loci - Constructions with straight edge and compasses; Regions, angle bisectors, perpendicular bisectors.	End of topic test

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Curriculum content for Year 9 Mathematics

Theme	Content	Assessment
Theme 1 **Powers, roots & surds**	Simplifying, × ÷ and simple rationalising.	End of topic test
Theme 2 **Number**	HCF/LCM, Product of Prime factors.	End of topic test
Theme 3 **Fractions, decimals & percentages**	FDP Conversions including. terminating and recurring decimals to fractions; Fractions & Percentages as operators etc. Percentage increase/decrease; Reverse & compound interest.	End of topic test
Theme 4 **Bounds**	Rounding, Estimating; calculations with LUB and GLB, error intervals.	End of topic test
Theme 5 **Measures**	Conversions (including area/volume); Compound measures (conversion, SDT, Density, pressure, population density etc. including algebra).	End of topic test
Theme 6 **Basic algebra, functions & substitutions**	Rearranging formulae; Introduction to functions including input/output.	End of topic test
Theme 8 **Sequences**	Triangle, square, cube, linear, Fibonacci, geometric, quadratic.	End of topic test
Theme 9 **Properties of shapes**	Faces, edges, vertices; Plans & elevations.	End of topic test
Theme 10 **Statistics & probability**	Sum to 1, sample space diagrams, listing strategies (product rule for counting), tree diagrams, relative frequency, two way tables, frequency trees, Venn Diagrams	End of topic test
Theme 11 **Area & volume**	Including trapezium, prisms, cylinders, spheres, cones; circles (area & circumference), compound shapes, arcs & sectors.	End of topic test
Theme 12 **Algebra & linear equations**	Brackets (expand & simplify, factorise with 1x2 only, including DOTs); Solve quadratics by factorising; Solve linear equations; y =mx + c (plot, find gradient & equation, parallel/perpendicular, intersecting).	End of topic test
Theme 13 **Ratios**	Including relating ratios to fractions and linear functions; multi-unit ratios.	End of topic test
Theme 14 **Angles**	Including parallel lines, polygons; Quadrilaterals' properties including angles; Map scale / bearings.	End of topic test
Theme 15 **Graphs**	Histograms; CF graphs, box plots, averages (including tables).	End of topic test
Theme 16 **Trigonometry**	Revise Pythagoras / trigonometry (including bearings, worded/questions and, in context, distance between points.	End of topic test

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References starting FM relate to AQA L2C Further Maths Specification

Suggested number of lessons are in brackets, bullet points indicate possible lessons.

Y9 AUTUMN 1

Topic	Spec ref	Description	Dolphin Textbook/Other Resources/Notes
Powers, Roots & Surds (3 lessons)	N6h	Use positive integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5	13.2 Questions: Which two integers does the root of 60 lie between? Roughly what is the side length of a square of area 90cm^2?
	N8h	Calculate exactly with…. Surds…. simplify surd expressions involving squares and rationalise denominators • Powers/Roots starter then Simplify surds and adding • Rules for Multiplication and division incl. expanding brackets with surds • Rationalising only with simple surd as denominator	13.3 17.2 Rationalising only with simple surds as a denominator. More complicated two term denominators taught 10AU2
Number (2 lessons)	N4	Use the concepts and vocabulary of prime numbers, factors (divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation theorem • Prime factorisation and factor trees, finding HCF and LCM using product of prime factors and Venn diagrams • Problem Solving with HCF/LCM	13.1 Include questions of the type: 1. What is the HCF and LCM of $2x^2y$ and $4xy^3$ 2. Two numbers have an HCF of 12 and LCM of 420. What could the numbers be? 3. A. Write 1764 as a product of Prime factors b. Hence write work out $\sqrt{1764}$
Fractions, Decimals & Percentages	N1	Order positive and negative integers, decimals and fractions; use the symbols =, ≠, <, >, ⩽, ⩾; Range for rounded numbers	Dolphin bk sections 5.1, 5.2, 5.3. No need to revise most of N1 – just ordering fractions really.

(7 lessons)	N2	Mixed operations with Fractions and mixed numbers; directed numbers. • Revise fraction calculations incl. real-life problems	Mainly revision of work in yr7/8 Questions:
	N3	Recognise and use relationships between operations, including inverse operations (eg cancellation to simplify calculations and expressions); Bodmas	
	N10h	Work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and 7/2 or 0.375 and 3/8); Change recurring decimals to fractions and vice versa • Convert from Terminating decimals to fractions (& %) and vice versa • Converting recurring decimals to fractions using algebra	If time…investigation: Which fractions give recurring decimals/which ones terminating [Ans: Fractions with a denominator with prime factors of 2/and or 5 only (… in its simplest form)]
	N12	Interpret fractions and percentages as operators	
	R9	Define percentage as 'number of parts per 100'; interpret percentages and percentage changes as a fraction or a decimal, and interpret these multiplicatively; express one quantity as a percentage of another; compare two quantities using percentages; work with percentages greater than 100%; solve problems involving percentage change, including percentage increase / decrease and original value problems, and simple interest including in financial mathematics. • Find a% of b (calc and non-calc) and write one number as percentage of another • Percentage increase and decrease, teach using a multiplier (useful for reverse percentages • Reverse percentages	Original value problems means reverse percentages. 12.3, 5.3 More Percentages in 10AU1 Questions: Why is 20% of 30 = 30% of 20? If prices increase by 10% then later decrease by 10%, do you end up with the same price? explain…
	R16h	Set up, solve and interpret the answers in growth and decay problems, including compound interest and work with general iterative processes • Compound interest/depreciation incl. different rates for different years.	Note this is the first time compound interest has been met. This does not include solving equations by iteration. That is 10SP1.

			Questions could include finding the number of years or the percentage rate (can be trial and error)
Rounding/ Bounds (2 lessons)	N14	Estimate answers; check calculations using approximation and estimation, including answers obtained using technology	1.1, 9.1, 9.3
	N15	Round numbers and measures to an appropriate degree of accuracy (eg to a specified number of decimal places or significant figures); use inequality notation to specify simple error intervals due to truncation or rounding; • Rounding (s.f. and d.p.), use error intervals and estimation (1 s.f.)	Truncation not tested in AQA (but is used in Edexcel). Briefly comment on it! DFM ppt
	N16h	Apply and interpret limits of accuracy including upper and lower bounds • Teach problems involving addition/subtract/multiplication and division	LUB – Least Upper Bound, GLB – Greatest Lowest Bound DFM ppt, Maths genie AQA GCSE questions – eg max safe load for a lift is 1600kg to nearest 100kg, can 24 boxes weighing 65kg to the nearest 5kg be safely lifted?
(3 lessons)		Revision, test and review	

Y9 AUTUMN 2

Units & Compounds Units (3 lessons)	R1 N13	Change freely between related standard units (eg time, length, area, volume/capacity, mass) and compound units (eg speed, rates of pay, prices, density, pressure) in numerical and algebraic contexts ; Mixed Measures • Converting units – Metric to metric, and common imperial-metric (giving the conversions)	9.3 (seen in 9AU1) Real-life conversions metric-imperial Questions: 1. $6m^2$ = ? cm^2 etc

			2. 75cl = ? ml 3. 10,000 cm = ? m
	R11	Use compound units such as speed, rates of pay, unit pricing, density and pressure • Speed Distance time including changing between units • Other compound units: Density, pressure etc	
Algebra (4 lessons)	A1	Use and interpret algebraic notation	6.1, part of 6.2
	A2	Substitute numerical values into formulae and expressions, including scientific formulae • Substituting into formula	
	A5	Understand standard mathematical formulae; rearrange formulae to change the subject. • Rearrange formulae with the variable occurring once • Rearrange formulae with the variable occurring more than once	
	A7 FM2.2	Where appropriate, interpret simple expressions as functions with inputs and outputs	This is just an introduction to function notation. More in 9SP2.
Sequences (3 lessons)	A23	Generate terms of a sequence from either a term-to-term or a position-to-term rule • Term to term rules introduce notation (perhaps combine with recognising types of sequences) and generating terms in a sequences from a formula.	21.1, 21.3. More in 10SP2. Note connections Between term to term rules and iteration in yr10
	A24	Recognise and use sequences of triangular, square and cube numbers, simple arithmetic progressions, Fibonacci-type sequences, quadratic sequences and simple geometrical progressions (r^n where n is an integer and r is a rational number > 0 or a surd) and other sequences	
	A25 FM2.21	Deduce expressions to calculate the nth term of linear sequences • Find the Nth term of a linear sequence (increasing and decreasing) • Problem solving with sequences	Recap from Yr7 Recognise that sequences can be generated from patterns and real-life contexts. Questions: Is 145 in the sequence 3,7,11,15? What is the nth term for: ½, 2/5, 3/8, 4/11

			Nth term of a Quadratic is 10SP2 but could be introduced for set 1 here.
Properties of Shapes (2 lessons)			
	G12	Identify properties of the faces, surfaces, edges and vertices of: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres Definitions of key words regarding shapes. This lesson could also include Euler's formula for Faces, Vertices and Edges.	15.1 Euler's Formula could be investigated (F + V = E + 2)
	G13	Construct and interpret plans and elevations of 3D shapes. Draw Nets of 3D shapes Plans and Elevations (& recap nets)	Nets is 7Su1
Coordinates & Transformations (3 lessons)	A8 G7	Work with coordinates in all four quadrants Revision of basic transformations: Identify, describe and construct congruent and similar shapes, including on coordinate axes, by considering rotation, reflection, translation and enlargement (including fractional scale factors* New) - Draw/Describe transformations: Translation, Reflection & rotation - Enlargement introduce fractional scale factors	Working with midpoints, quadrilaterals, etc. Some revision of transformations required (not negative SF Enlargement)
	G11	Solve geometrical problems on coordinate axes Problem solving with coordinates (shapes, transformations etc)	Test also requires impact of simple transformations on a coordinate point. See WhiteRose worksheet Also see NCETM Checkpoints Question: 1. Given three coordinates of a parallelogram, find the third 2. Finding mid-points could be included here
(3 lessons)		Revision, test and review	Revision, test and review

Y9 SPRING1

Probability (More in 10SP1) (5 lessons)	P1	Record, describe and analyse the frequency of outcomes of probability experiments using tables and frequency trees;	Tables means two-way tables. 8.1, 8.2, 8.3, 20.1, 20.2, 20.3
	P2	Apply ideas of randomness, fairness and equally likely events to calculate expected outcomes of multiple future experiments	
	P3	Relate relative expected frequencies to theoretical probability, using appropriate language and the 0 - 1 probability scale	
	P4	Apply the property that the probabilities of an exhaustive set of outcomes sum to 1; apply the property that the probabilities of an exhaustive set of mutually exclusive events sum to 1	
	P6 P7	Enumerate sets and combinations of sets systematically, using tables, grids, Venn diagrams and tree diagrams Construct theoretical possibility spaces for single and combined experiments with equally likely outcomes and use these to calculate theoretical probabilities - Basic Probability, relative frequency (new?) and sample space diagrams - Frequency trees - Venn diagrams introduce, including notation - Venn diagram problems - Probability tree diagrams	Point out differences between frequency trees and probability tree diagrams to avoid students getting confused Frequency trees are not in textbook. Worksheets are on SharePoint. Venn Diagrams worksheets on SharePoint At this stage Conditional probability is not included with tree diagrams Relative Frequency – mention that the higher the number of trials the better estimate of the probability
	N5h FM1.1	Apply systematic listing strategies including use of the product rule for counting 1 lesson on teaching listing strategies and product rule for counting	Include the factorial function. Not in book. Some worksheets on Netapps. Note AQA questions for this topic are quite different to Edexcel. Example:

			1. a) With the digits 2,3,5,7 and 8 how many numbers greater than 30 000 can be made? b) How many of these are odd? 2. A padlock has a 4 digit code. Each digit can be 0-9. How many different codes can be made?
Length, Area & Volume (6 lessons)	G16	Know and apply formulae to calculate: area of triangles, parallelograms, trapezia; volumes of cuboids and other right prisms (including cylinders)	7.2, 15.2, 15.3, 11.1, 11.2
	G9	Identify and apply circle definitions and properties, including: centre, radius, chord, diameter, circumference, tangent, arc, sector and segment;	Some of these G9 definitions aren't really needed until 10SU1, but introduce them now please.
	G17	Know the formulae: circumference of a circle = $2\pi r = \pi d$, area of a circle = πr^2; calculate: perimeters of 2D shapes, including circles; areas of circles and composite shapes; surface area and volume of cylinders, spheres, pyramids, cones and composite solids	Include answers in terms of π
	G18	Calculate arc lengths, angles and areas of sectors of circles	
		• Area of basic shapes including compound shapes (particularly recap trapezium) • Area and circumference of circles • Area and perimeter of sectors • Volume & surface Area of Cuboids, Prisms and cylinders • Volume and Surface area of Spheres and cones • Volume of Pyramids	
3 lessons		Revision, test and review	

Algebra (7 lessons)	A4 FM2.6 FM2.8	Simplify and manipulate algebraic expressions by: collecting like terms, multiplying a single term over a bracket, taking out common factors, expanding products of two binomials,factorising quadratic expressions of the form $x^2 + bx + c$, including the difference of two squares,simplifying expressions involving sums, products and powers, including the laws of indices • Revise expanding single brackets (including questions like: 2(3x+4) – 5(2x– 3)) • Expand double brackets with a=1 • Expand brackets with a>1 • Factorising single brackets and double brackets a=1 • Expanding triple brackets	2.2, 2.3, 6.4. FM factorising may be harder than for GCSE Maths. See textbook and FM worksheets. Expanding triple brackets is included Difference of two squares/perfect squares
	A18	Just 'Solve quadratic equations algebraically by factorising' • Solving quadratics by factorising, incl where you have to rearrange.	10.2 Consider only covering solving by factorising monic quadratics (a=1) here and leaving non-monic until 10AU2. Completing the square, using the formula and solving graphically come in 10AU2
	A17	Solve linear equations in one unknown algebraically (including those with the unknown on both sides of the equation); find approximate solutions using a graph. • Solving linear equations algebraically	10.1 Include linear equations with fractions
Straight Lines (4 lessons)	A9 & A9h	Plot graphs of equations that correspond to straight-line graphs in the coordinate plane; use the form y = mx + c to identify parallel lines and perpendicular lines; find the equation of the line through two given points, or through one point with a given gradient • Plotting/drawing straight-lines	14.1 Do include the use of function notation to make explicit links with that area of curriculum.

		- Finding the equation of a line through two points or through one point with a given gradient - Parallel and perpendicular lines - Solving linear equations using a graph (see A17)	Include graphical solution of simultaneous equations
(3 lessons)		Revision, test and review	

Y9 SUMMER 1

Ratio	R3	Express one quantity as a fraction of another, where the fraction is < 1 or > 1	12.1, 12.2
(4 lessons)	R4	Use ratio notation, including reduction to simplest form	
	R5	Divide a given quantity into two parts in a given part : part or part : whole ratio; express the division of a quantity into two parts as a ratio; apply ratio to real contexts and problems (such as those involving conversion, comparison, scaling, mixing, concentrations) • Simplify ratios, share in a ratio and solve problems with ratios • Harder ratio: Combining two ratios eg A:B = 3:4 and B:C = 7:5, what is the ratio of A:C? • Problem solving involving ratio and algebra?	See Dr Austin sheet for combining ratios Ratio and problem solving needs resources.
	R6	Express a multiplicative relationship between two quantities as a ratio or a fraction • Rates of work problems	This includes rate of work problems eg it takes 2 men 3 days to mow a meadow... (see Onedrive for questions) Note: Often rate problems involve the reciprocal of the time to work out a rate to use.
	R7	Understand and use proportion as equality of ratios	
	N11	Identify and work with fractions in ratio problems	This has moved from Aut 1
	R8	Relate ratios to fractions and to linear functions	Also questions involving combining bits of information into a three way ratio.
Units	G14	Use standard units of measure and related concepts (length, area, volume/ capacity, mass, time, money etc)	Does not need to be taught explicitly as already covered. Revise in context of multi-unit ratios.
Angles (4 lessons)	G1	Use conventional terms and notations: points, lines, vertices, edges, planes, parallel lines, perpendicular lines, right angles, polygons, regular polygons and polygons with reflection and/or rotation symmetries; use the standard conventions for labelling and referring to the sides and angles of triangles; draw diagrams from written description	3.1, 3.2, 3.4

	G3	Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles; understand and use alternate and corresponding angles on parallel lines; derive and use the sum of angles in a triangle (eg to deduce and use the angle sum in any polygon, and to derive properties of regular polygons) • Angle problems with triangles, quadrilaterals and interior/exterior angles. Vertically opposite angles (& other basic rules) • Angles with Parallel lines • Polygons	
	G4	Derive and apply the properties and definitions of: special types of quadrilaterals, including square, rectangle, parallelogram, trapezium, kite and rhombus; and triangles and other plane figures using appropriate language • Lesson on Properties of Quadrilaterals	
Scale drawing (2 lessons)	R2	Use scale factors, scale diagrams and maps	7.1
	G15	Measure line segments and angles in geometric figures, including interpreting maps and scale drawings and use of bearings • Bearings including back bearings and measuring • Lesson on map scales, calculations and drawing /measuring	

Y9 SUMMER 2

Statistics (3 lessons)	S3h	Construct and interpret diagrams for grouped discrete and continuous data, ie histograms with equal and unequal class intervals and cumulative frequency graphs, and know their appropriate use • Histograms – constructing and interpreting (explain the difference between bar-charts and histograms) • Revision of CF • Revision of Box-plots	4.2, 4.3, 16.1, 16.2 Some comparison of distributions Median/IQR but more of this in 11Au2

	S4h	Interpret, analyse and compare the distributions of data sets from univariate empirical distributions through appropriate graphical representation involving discrete, continuous and grouped data, including box plots; appropriate measures of central tendency (median, mean, mode and modal class) and spread (range, including consideration of outliers, quartiles and i-q range range)	
5 lessons?		End of Year Exam/s	
Pythag & Trig (Seen 8SU1) (3 lessons)	G20	Know the formulae for: Pythagoras' theorem, $a^2 + b^2 = c^2$, and the trigonometric ratios, $\sin\square = {}^{opp}/_{hyp}$, $\cos\square = {}^{adj}/_{hyp}$ and $\tan\square = {}^{opp}/_{adj}$; apply them to find angles and lengths in right-angled triangles in two dimensional figures • Pythagoras including distance between points • Trigonometry calculating sides • Trigonometry calculating angles	19.1, 19.2 Include use of bearings in trig context, and worded problems. No 3D required. Question: Is a triangle with sides 5, 12 and 13 right angled?
		Note: Proportion moved to 10AU1	
		If finished other work could include: 1. Statistics project work (Sports data: athletics/tennis/football) 2. Old Spec GCSE coursework tasks or similar (Open box, field Investigation, New York Cop) 3. GCSE Papers 4. Problem Solving Tasks	