Mathematics

Scheme of work: year 7 to year 11

THE CAM ACADEMY TRUST

KS2 ≤ S4 | S5 ≤ KS3 ≤ S9 | S10 ≤ KS2 ≤ S17 | S18 ≤ KS2

Number

	Term 1: place value and indices	Term 2: calculations	Term 3: fractions
α	αNum1 times tables; place value	αNum2 integer complements; division facts; + and – positive integers	αNum3 representation of fractions
A	ANum1 times tables; × and ÷ by powers of 10; time; money; measurement	ANum2 positive integer complements; division facts; written methods of +, –, ×, ÷ with integers; rounding to integers	ANum3 place fractions on a number line; + and – fractions with same denominator; unit fractions of an integer amount
B	BNum1 comparing decimals; order of operations; negative numbers; factors and multiples; primes	BNum2 written methods of ×, ÷ with integers and decimals; rounding to decimals	BNum3 equivalent fractions; + and – fractions; order fractions; fractions to/from %
C	CNum1 metric units; 4 operations with negatives; × and ÷ by negative powers of 10; prime factors	CNum2 written methods of +, –, ×, ÷ with integers and decimals; imperial measures; calculator use; number problems in context	CNum3 improper fractions and mixed numbers; fractions of an amount
D	DNum1 indices; positive integer powers and roots; LCM and HCF through prime factors; related calculations	DNum2 calculator use; rounding to significant figures; truncation; bounds	DNum3 reciprocals; × and ÷ fractions; FDP conversions
E	ENum1 negative integer powers; standard form	ENum2 compound measures; methods of checking; bounds	ENum3 recurring decimals
F	FNum1 fractional powers; surds	FNum2 bounds, product rule for counting	
G	GNum1 more complex powers; surds		

Algebra

	Term 1: algebraic manipulation	Term 2: solving equations	Term 3: sequences and graphs
α	αAlg1 using letters to represent unknown numbers	αAlg2 simple substitution; function machines	αAlg3 extend linear sequences; coordinates
A	AAlg1 using letters to model situations; algebraic notation; simplification; substitution	AAlg2 function machines; forming equations; solving 1- and 2-step linear equations	AAlg3 describe sequences; coordinates in 4 quadrants
B	BAlg1 algebraic notation; simplification; substitution with a focus on order of operations	BAlg2 solve equations with an unknown on each side	BAlg3 generate sequences; describe sequences from physical situations; plot simple lines
C	CAlg1 forming expressions; expanding brackets	CAlg2 solve linear equations with brackets; rearrange simple formulae	CAlg3 linear graphs in the form $y = mx + c$ and other forms; graphs representing real-life situations
D	DAlg1 expressions with index notation; function notation; subtracting a bracket; factorising into a single bracket; proof	DAlg2 form and solve linear equations involving simple fractions; solve linear equalities	DAlg3 nth term of a linear sequence; generate non-linear sequences; flowcharts; plot non-linear graphs
E	EAlg1 expanding and factorising quadratics; difference of two squares; quadratic graphs	EAlg2 solve linear equations with fractions that require + or –; solve simultaneous equations using elimination	EAlg3 equations of lines and perpendicular lines; inequalities in the plane; 3D coordinates
F	FAlg1 expanding more complex brackets; completing the square; quadratic formula; algebraic fractions	FAlg2 linear/quadratic/simultaneous equations/formulae/inequalities requiring complex manipulation to solve/rearrange; inverse functions	FAlg3 constant acceleration formulae; area under a graph; transformation of graphs; nth term of a quadratic sequence
G	GAlg1 harder expanding and factorising; identities and proof; factor theorem; algebraic fractions; limiting values of fractional sequences	GAlg2 linear, quadratic and simultaneous formulae/equations/inequalities requiring complex manipulation to solve/rearrange; inverse functions	

Ratio and proportion

	Term 3: ratio and proportion
α	
A	ARatio3 percentages and fractions; writing ratios
B	BRatio3 equivalent ratios; sharing in a given ratio; fractions to/from ratios
C	CRatio3 unitary method; percentage of an amount; direct proportion; scale drawing
D	DRatio3 % increase/decrease/change (including compound interest); reverse %; indirect proportion
E	ERatio3 exponential growth and decay
F	FRatio3 proportion equations and graphs; ratio equations; tangents and rates of change
G	

Geometry

	Term 1: angles	Term 2: perimeter, area and volume	Term 3: transformations
α	αGeom1 angle vocabulary; common 2D shapes	αGeom2 area and perimeter by measuring or counting	αGeom3 line symmetry
A	AGeom1 measure and draw angles; angles on straight lines; nets; constructions	AGeom2 area and perimeter by measuring, counting or calculation	AGeom3 line and rotational symmetry; properties of 2D shapes
B	BGeom1 angles on lines, around points and in triangles; tessellation; construction of triangles	BGeom2 formulae for area or rectilinear shapes, parallelograms, triangles and trapezia; area and perimeter of compound shapes	BGeom3 properties of 3D solids; isometric drawing; plans and elevations
C	CGeom1 angles on parallel and perpendicular lines; angles in polygons; properties of 2D shapes; bearings	CGeom2 circle terminology; area and circumference of a circle; area and perimeter problems	CGeom3 similar and congruent shapes
D	DGeom1 Pythagoras' theorem; constructions; congruency; proof	DGeom2 volume and surface area of prisms and cylinders	DGeom3 transformations; vectors
E	EGeom1 trigonometry in right-angled triangles	EGeom2 arc length; sector area; volume of spheres/pyramids/cones; area/volume unit conversion	EGeom3 enlargement with negative and fractional scale factors; proof using congruence and similarity; vectors
F	FGeom1 circle theorems; trigonometry in non-right-angled triangles; Pythagoras and trigonometry in 3D	FGeom2 segment area; problems involving volume and surface area of cones; surface area and volume of similar solids	FGeom3 combined transformations; matrices
G	GGeom1 trigonometric identities and graphs; coordinate geometry; differentiation of polynomials	GGeom2 equations of circles; solve trigonometric equations; applications of differentiation	

Data

	Term 1: statistical diagrams	Term 2: statistical calculations	Term 3: probability
α	αData1 tally charts; frequency tables; pictograms; Venn diagrams; Carroll diagrams	αData2 measures of location (min, max, middle value); interpreting data	αData3 probability using words
A	AData1 collecting and sorting data; bar charts	AData2 measure of location (mode, median); measures of spread (range); interpreting data	AData3 probability scales
B	BData1 hypotheses; types of data; line charts; bar charts	BData2 measures of location, the differences between them and making comparisons using them	BData3 probability using numbers; experimental probability
C	CData1 data handling cycle; pie charts; interpreting data	CData2 measures of location and spread from ungrouped frequency tables; appropriateness and interpretation	CData3 sample space diagrams; possibility trees; mutually exclusive outcomes; probability of complements
D	DData1 hypotheses; collecting data; scatter graphs	DData2 measures of location for grouped data	DData3 relative frequency; probability notation; frequency trees; probability trees; Venn diagrams
E	EData1 two-way tables; sampling	EData2 stem-and-leaf diagrams; analysing and interpreting data	EData3 combined probabilities; set notation; tree diagrams
F	FData1 cumulative frequency; quartiles; box plots; comparing data sets; data handling cycle	FData2 frequency diagrams; histograms with unequal width groups	FData3 conditional probability
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