CAM Trust Mathematics Department	**This document outlines the main activities you will complete this year. Use this as a guide to prepare for lessons or check your understanding.** **E scheme** Learning log 2024/25
Name:	
Maths teacher(s):	
Maths group:	

I will:

- work to the best of my ability, showing all my workings
- complete my homework to a good standard by the deadline set
- show tenacity when solving problems
- always have the correct equipment for all lessons

Signed:

……

The Mathematics Department will:

- help you develop fluency in mathematical concepts
- help you develop your mathematical communication and reasoning
- help you develop problem solving skills
- set appropriate homework
- regularly assess your progress
- give you regular feedback and let you know what else you need to do to maintain or increase your progress

Signed:

Maths Department

Sparx Maths

Online homework tasks will be set at www.sparxmaths.com
You will use your school log-in details.

Use this space to keep track of your Sparx XP-level:

XP level	

Every lesson you will need to bring this equipment:

- exercise book
- learning log
- scientific calculator
- black pen × 2
- pencil × 2
- ruler
- eraser
- pencil sharpener
- highlighter

When advised, you will also need to bring:

- protractor
- pair of compasses

Optionally:

- colouring pencils

	HW		Objectives Term 1 Autumn	Sparx
ENum1	—		Revision: Understand what it means to raise something to the power of 0 and 1	
			Revision: Know how to multiply and divide powers of a number, eg $10^4 \times 10^3 = 10^{4+3} = 10^7$; $10^4 \div 10^3 = 10^{4-3} = 10^1$	U851
			Revision: Find a power of a power, eg $(10^4)^3 = 10^{4\times3} = 10^{12}$	U235
			Understand and use negative indices in number work and in algebra	U694
			State the reciprocal of any given number	
			Read and write numbers in standard form, on paper and on a calculator	
			Convert between ordinary and standard form	U330, U534
			Do calculations with standard form without a calculator	U264, U290
			Do calculations with standard form with a calculator	U161
			Solve problems in standard form	
			Given a number that is not in standard form, be able to convert it, eg 45 × 103 = 4.5 × 104	U330
			Be able to put standard form numbers in order	
		powers, indices, index, [reciprocal, BIDMAS, standard form, standard index form, ordinary number, convert		
EAlg1	—		Revision: Factorise an expression into a single pair of brackets, eg $3a^2 + ab = a(3a + b)$	U365
			Multiply two brackets to form a quadratic expression, eg $(x + 3)(x + 2)$; $(x + 5)^2$	U768, U150
			Factorise quadratic expressions into two brackets, eg $x^2 - 7x + 12$	U178
			Solve quadratic equations by factorising eg $x^2 - 7x + 12 = 0$	U228
			Recognise the difference of two squares and perfect squares	U963
			Draw the graph of a quadratic function, showing the y- and x-intercepts and the coordinates of the turning point.	U989, U667
			Solve quadratic equations from a graph	
			Be able to work out the line of symmetry of a quadratic graph	
		linear expression, quadratic expression, brackets, factorise, solve, identity, difference of two squares, quadratic equation, solution, roots, quadratic, roots, x-intercepts, y-intercept, turning point, axes, function, table of values, scale, estimate		
EGeom1	—		Use trigonometric ratios sin, cos and tan to calculate lengths in right-angled triangles	U605, U283
			Use inverse trigonometric ratios to calculate angles in right-angled triangles	U545
			Solve problems involving trigonometry and Pythagoras	U283
			Solve bearings and elevation problems using trigonometry and Pythagoras	U967
			Recall or work out the exact values of the trigonometric ratios for angles 0°, 30°, 45°, 60° and 90°	U627
		trigonometry, sine/sin, cosine/cos, tangent/tan, inverse, hypotenuse, similar triangles		
EData1	—		Understand and complete two-way tables. Use two-way tables to sort out information and solve problems	U981
			Know the difference between a population and a sample	U162
			Describe different methods of sampling, and the advantages and disadvantages of each method	U162
			Know how to carry out a systematic sample for a given data set	U162
			Infer properties of populations or distributions from a sample	
		population, sample, experiment, bias, representative, sample size, random sample, systematic sample, stratified sample, strata, proportion, two way table, convenience sample		

Number	Algebra	Geometry	Data	Revision	Total	
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	HW		Objectives Term 2 Spring	Sparx
ENum2	—		Revision: Solve problems involving speed	U151
			Revision: Solve problems involving density	U910
			Solve problems involving multiple legs of a journey where each leg is at a different speed	U151
			Solve problems involving pressure	U527
			Understand how to use the units of compound measures as a way of recalling the formula for working them out	U256
			Check calculations using estimation, working backwards or sensible size	U225
			Find upper and lower bounds of measurements	U657, U301, U587
			Work out exact answers including π, fractions and square roots	
		speed, distance, time, decimal measure, density, volume, mass, weight, pressure, calculation, estimate, order of magnitude, accuracy, rounding, significant figures, decimal places, upper/lower bound, error, maximum, minimum		
EAlg2	—		Solve equations involving fractions eg $\frac{x}{2}-\frac{x}{5}=\frac{3}{4}$	U505
			Rearrange and change the subject of formulae involving fractions	U556
			Know how to rearrange a formula where the new subject appears twice	
			Solve linear simultaneous equations by finding the point of intersection of two lines on a graph	U875
			Solve linear simultaneous equations using elimination	U760
			Write and solve simultaneous equations from practical situations	U137
		fraction, denominator, common denominator, linear equation, simultaneous equation, coefficient, unique solution		
EGeom2	—		Calculate the area of a sector of a circle	U373
			Calculate the arc length and the perimeter of a sector	U221
			Find the radius or the angle of a sector if I know the area or arc length	U464,U523, U893
			Calculate the surface area of a prism, cylinder, cone, or sphere	U929, U259
			Calculate the volume of a prism, cylinder, cone, pyramid, or sphere	U786, U174
			Convert between metric units of area, volume and capacity	U248, U468
		area, circumference, radius, diameter, pi π, square cm/cm, arc, sector, volume, prism, pyramid, cone, sphere, surface area		
EData2	—		Use a stem-and-leaf diagram to sort data, explore the modal group and the overall shape of the data and to spot patterns.	U200, U909
			Use a back-to-back stem-and-leaf diagram to compare two sets of data.	
			Find lower quartile and upper quartile from an ordered list of data or from a stem and leaf diagram.	
			Given data presented in a pie chart or bar chart, work backwards to complete a frequency table	U508,U172,U854
			Find the mode (or modal group), median (or median group) and mean (or estimated mean) from data presented in a list, stem and leaf diagram or frequency table	U569, U877
			Be able to use all the evidence from the averages, and shape of distributions on graphs, to reach a conclusion on a hypothesis	
		stem, leaf, mode, modal, modal group, median, mean, estimated mean, range, negative skew, positive skew, back to back, split stem, lower/upper quartile, inter-quartile range, pie chart, bar chart, grouped data, ungrouped data		

Number	Algebra	Geometry	Data	Revision	Total	
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	HW		Objectives Term 3 Summer	Hegarty
ENum3	—		Convert fractions to decimals	U888,U550
			Convert terminating decimals and recurring decimals to fractions	U689
			recurring decimal, terminating decimal	
EAlg3	—		Understand the relationship between speed, distance and time	U151
			Use a graph to work out speed	U562
			Given speed, finish an incomplete graph	U966
			Find a rule from an investigation, using algebra correctly	
			Understand the difference between a specific example and a proof	U582
			Find the equation of a straight line using the gradient and y intercept	U741,U315 U669,U477 U848,U377 U898
			Find the equation of a straight line using the gradient and a point on the line	
			Find the equation of a line parallel or perpendicular to one given	
			Find the equation of a line given two points on the line	
			Find the midpoint of a line segment (2-D) given the coordinates of the ends. Find and solve problems with midpoints	U933
			Use Pythagoras to find the length of a line segment (2-D) given the coordinates of ends.	U541
			Show inequalities on a graph, with correct lines and shading	U747
			Be able to combine inequalities graphically to find a region that satisfies all of them and state the coordinates of points within that region (with integer values)	
			problem, specific, general, generalisation, straight-line graph, linear graph, gradient, y-intercept, equation, scattergraph, line of best fit, parallel, rate of change, inequality, inequalities, boundary, strict inequality, weak inequality, satisfy, region, integer point, negative reciprocal, perpendicular, 1D, 2D, 3D, midpoint	
ERatio3	—		Understand and calculate simple and compound interest	U533,U332
			Calculate repeated percentage changes eg depreciation using the power key on a calculator	U773
			Set up, solve and interpret the answers in growth and decay problems and work with other general iterative processes	U988
			Create equations from ratio statements, and be able to manipulate between different forms.	U676
			Use scaling to combine ratios given separately to compare as a new ratio If you know a:b and b:c, what is a:c?	U921
			Know how to work with ratio change problems	U865
			iteration, multiplier, power, percentage, exponential, growth, decay	
EGeom3	—		Enlarge a shape using a centre of enlargement and positive or negative integer or fractional scale factor	U519,U134
			Solve problems involving similar and congruent shapes, finding lengths and angles	U578,U790
			Show two triangles are congruent using SSS, SAS, ASA, RHS	U866
			Use a diagram to represent the sum (resultant) and difference of two vectors, and to find parallel vectors.	U632,U903
			Know how to use ratios in vector problems and find the scalar multiple of a vector.	U564
			Be able to apply vector methods to provide simple geometric proofs	U781, U660, U560
			congruent, similar, ratio, resultant, vector, scalar, parallel	
EData3	—		Understand and use the notation $A \cap B$ (intersection), $A \cup B$ (union), A' (compliment) and ξ (universal set). Represent these on a Venn diagram.	U296
			Solve problems given a Venn diagram	U476, U748
			Draw a Venn diagram to show all outcomes of compound events and use it to find the probability of any of the different outcomes (or combinations of outcomes) occurring.	U699
			Draw a probability tree diagram to solve problems involving the outcomes and probabilities of compound events	U558
			Understand the difference between independent and conditional events. Relate this to selection with or without replacement.	U729

		Venn diagram, universal set, set notation, complement, intersection, union, probability tree diagram, AND rule, OR rule, conditional, independent, mutually exclusive, outcome, event, compound events, theoretical probability, bias, experimental probability, replacement, relative frequency

Number	Algebra	Ratio	Geometry	Data	Total	
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