

Sequenced	Pythagoras' theorem	Non-linear graphs	Sets and probability	Transformations	Key stage 4 readiness responsive teaching unit based on assessment	Constructions
Key Knowledge	To know that: - In any right-angled triangle, the square of the hypotenuse equals the sum of the squares of the other two sides: $c^2 = a^2 + b^2$. - The hypotenuse is always the longest side, directly opposite the right angle. - Pythagoras' theorem applies to 2D shapes, 3D shapes, and calculating distances between coordinates.	To know that: - Quadratic graphs ($y = ax^2 + bx + c$) form symmetrical U-shaped (parabolic) curves. - Cubic graphs ($y = ax^3 + \dots$) and reciprocal graphs ($y = k/x$) produce distinct non-linear curves with inflection points or asymptotes. - The roots of an equation $f(x) = 0$ correspond to the x-intercepts of its graph.	To know that: - The probability of an outcome ranges from 0 (impossible) to 1 (certain), and mutually exclusive exhaustive outcomes sum to 1. - Venn diagrams show relationships between sets using universal set (ξ), intersection ($\cap$), union ($\cup$), and complement (A'). - Tree diagrams and sample space diagrams organize outcomes for combined independent and dependent events.	To know that: - Reflection, rotation, and translation are congruent transformations that preserve shape and size. - Translation is defined by a column vector $[x, y]$; rotation by angle, direction, and centre; reflection by a mirror line equation. - Enlargement alters size by a scale factor k from a centre of enlargement, producing similar shapes.	Following the DC2 (end of key stage 3) maths assessments, teachers will use this time to fill gaps in knowledge and skills in readiness for key stage 4.	To know that: - A locus is a set of points satisfying a specific geometric rule or distance requirement. - Standard constructions require a ruler and compasses (perpendicular bisectors, angle bisectors, perpendiculars). - Shapes are congruent if they are identical in size and shape; triangle congruency criteria are SSS, SAS, ASA, and RHS.
Key Skills	To be able to: - Calculate the hypotenuse length using $c = \sqrt{a^2 + b^2}$. - Calculate missing shorter side lengths using $a = \sqrt{c^2 - b^2}$. - Solve multi-step 2D and 3D geometric problems. - Find the distance between two coordinate points on a Cartesian grid.	To be able to: - Construct tables of values and plot quadratic, cubic, and reciprocal graphs. - Identify key features of non-linear graphs including roots, y-intercepts, turning points (vertices), and asymptotes. - Estimate solutions to non-linear equations graphically using points of intersection.	To be able to: - Calculate probabilities from Venn diagrams, sample space diagrams, and tree diagrams. - Use set notation ($\in, \notin, \cap, \cup, A'$) to represent outcomes and events. - Solve conditional probability problems using tree diagrams and Venn diagrams.	To be able to: - Reflect, rotate, translate, and enlarge 2D shapes on Cartesian axes. - Describe fully a single transformation that maps one shape onto another. - Perform enlargements using fractional and negative scale factors.		To be able to: - Construct perpendicular bisectors, angle bisectors, and given angles using a ruler and compasses. - Construct loci and shade regions satisfying multiple distance conditions/inequalities. - Prove that two triangles are congruent using SSS, SAS, ASA, and RHS conditions.
Subject specific vocabulary	Adjacent, distance, hypotenuse, opposite, perpendicular, proof, Pythagoras' theorem, Pythagorean triple, right-angled triangle, square number, square root, 3D coordinates	Asymptote, cubic graph, curve, estimate, inflection, intersection, non-linear, parabola, quadratic graph, reciprocal graph, root, symmetry, table of values, turning point, vertex	Complement, conditional probability, element, exhaustive, intersection, mutually exclusive, outcome, probability, sample space diagram, set notation, tree diagram, union, universal set, Venn diagram	Centre of enlargement, centre of rotation, column vector, congruence, direction, enlargement, invariant point, line of reflection, negative scale factor, reflection, rotation, scale factor, similarity, transformation, translation		Angle bisector, ASA (Angle-Side-Angle), compasses, congruence, construction, equidistant, loci, locus, perpendicular bisector, RHS (Right angle-Hypotenuse-Side), SAS (Side-Angle-Side), SSS (Side-Side-Side)