Curriculum Implementation Mapping – Skills and Knowledge

Subject: Maths   **Year group: 10 Higher**

Topic	Term 1	Term 2	Term 3
Knowledge	· Number recap and review – multiplication and division with decimals; multiples, factors and primes; HCF and LCM; product of primes; percentages · Counting, accuracy and surds – rational numbers, reciprocals, terminating and recurring decimals; estimating powers and roots; negative and fractional powers · Quadratic Equations – plotting quadratic graphs, solving quadratic equations by factorisation, using the quadratic formula to solve equations, completing the square to solve quadratic equations Sampling and statistical diagrams - Collecting data - frequency polygons - cumulative frequency graphs - box plots - histograms	Ratio, proportion and rates of change – ratio, direct proportion, inverse proportion Similarity - Similar Triangles, Areas and Volumes of similar shapes Exploring and Applying Probability - Experimental Probability, Mutually Exclusive Events, Exhaustive Outcomes, Expectation, Two-way Tables, Venn Diagrams Sequences - Review from year 9	Equations and Inequalities - linear equations review, solving simultaneous equations review and extension, solving linear inequalities, graphical inequalities, approximation. Circle Theorems – cyclic quadrilaterals, tangents and chords, alternate segment theorem Linear graphs - review from year 9

Skills	· Number recap and review – perform calculations involving: multiplication and division with decimals; multiples, factors and primes; HCF and LCM; product of primes; percentages. Apply this knowledge to solve problems · Counting, accuracy and surds – recognise rational numbers, reciprocals, terminating and recurring decimals; convert terminal decimals to fractions; convert fractions to recurring decimals; find reciprocals of numbers or fractions; estimate powers and roots of any given number; apply index laws to negative and fractional powers; find and use the relationship between negative powers and roots Quadratic Equations – draw and read values from quadratic graphs; solve a quadratic equation by factorisation; rearrange a quadratic equation so that it can be factorised; solve a quadratic equation using the quadratic formula; recognise why some quadratic equations can't be factorised; solve a quadratic equation by completing the square Sampling and statistical diagrams - understanding sampling; collect unbiased reliable data for a sample; draw and interpret frequency polygons; draw and interpret cumulative frequency graphs; draw and interpret box plots; draw and interpret histograms where the bars are of equal or unequal width; calculate median, quartiles and interquartile range from a histogram, cumulative frequency graph or a set of data.	Ratio, proportion and rates of change – simplify a ratio; express a ratio as a fraction; divide amounts in a given ratio; complete calculations from a ratio; solve problems where two variables have a directly proportional relationship; work out the constant of proportionality; solve problems where two variables have an inversely proportional relationship; work out the constant of proportionality; · Similarity – show two triangles are similar, work out the scale factor between similar triangles, solve problems involving the area and volume of similar shapes · Exploring and Applying Probability – calculate experimental probabilities and relative frequencies, estimate probabilities from experiments; use different methods to estimate probabilities; recognise mutually exclusive, complementary and exhaustive events; predict the likely number of successful events, given the number of trials and probability of outcomes; read two-way tables and use to find probabilities; use Venn diagrams to solve probability questions - Find the n th term of a linear sequence (including one represented as a diagram); Solve Fibonacci style sequence problems and other special sequences; Generate the terms of a quadratic sequence from the n th term; Work out the n th term of a quadratic sequence.	Equations and Inequalities - Solve equations involving expansion of brackets; Solve equations where the variable appears on both sides of the equals sign; Solve equations in which the variable appears as part of the numerator and denominator of a fraction; Set up equations from given information and then solve them; solve simultaneous equations using a graph, elimination method and substitution method; solve problems using simultaneous equations; solve simple linear inequalities and represent them on a number line; show a graphical inequality and a region defined by inequalities; rearrange equations ready for iterative process; find approximate solutions to equations numerically using iteration. Circle Theorems – work out the sizes of angles in circles; find sizes of angles in cyclic quadrilaterals; use tangents and chords to find sizes of angles in circles; use alternate segment theorem to find sizes of angles in circles Linear graphs - plotting a linear graph; finding the equation of a linear graph; finding the equation of a parallel or perpendicular line.
Assessment Pattern	1 hour Summary Assessment to be sat in class	Teacher Assessment	1 hour Summary Assessment to be sat in class

Topic	Term 4	Term 5	Term 6
Knowledge	Indices - indices review, laws of indices, negative indices Vector geometry - properties of vectors, vectors in geometry Angles - review of angles from year 9 Geometry - review of area and volume from year 9.	Trigonometry review and extension - trigonometry in right angled triangles, solving problems using trigonometry, exact trig values, 3D trigonometry, Sine rule, Cosine rule, Area. Functions - Inputs and outputs, mappings, inverse functions, composite functions Transformations - review from year 9	Indices review and extension - Negative indices, fractional indices Accuracy - bounds DIRT
Skills	Indices - Use rules for multiplying and dividing with indices; Understand what happens when the power is zero and why; Use rules for raising a power to a power. Vector geometry - Understand reciprocal and be able to work a reciprocal out; Use rules for negative powers; Add and subtract vectors; Multiplication of vectors by a scalar; Diagramatic representation of a vector; Use vectors to solve geometrical problems; Use vectors to construct geometric arguments and proofs. Angles - To solve problems involving alternate, corresponding, co-interior and opposite angles; To work out the sum of the interior angles in a polygon; To be able to calculate the size of the interior and exterior angles of any regular polygon. Geometry - Calculate area of 2D shapes (including compound, sectors, and surface area); Calculate volume and surface area of 3D shapes (including Pyramids, Cones, Spheres); Solve problems involving volume/area.	Trigonometry review and extension - Find lengths of sides and angles in right-angled triangles using trigonometry; Solve practical problems using trigonometry including angles of elevation/depression, use of bearings, Isosceles/Equilateral triangles; Calculate exact values using triangles; solve problems in 3D; Use the Sine rule to find a missing length or angle in a non right angled triangle; Use the Cosine rule to find a missing length or angle in a non right angled triangle; Work out the area of a triangle if you know two sides and the included angle Functions - Use functions (and function notation) to calculate an output or input; determine a function from a mapping; find and use an inverse function; find and use a composite function. Transformations review - Reflect, Rotate, Translate, Enlarge an object accurately (including a combination of these); Describe a transformation; Construct a region from a set of rules	Indices review and extension - apply the rules for negative and fractional powers Accuracy - find the error interval for a rounded value; combine limits of two or more variables together to solve accuracy problems
Assessment Pattern	Teacher Assessment	Teacher assessment.	End of year: Mocks. Full set of GCSE papers sat in the hall.