Curriculum Overview			
Year Group	**Term**	**Unit of Work**	**Assessment Content**
7	1	**Whole numbers and Decimals** Students will: • Understand and use place value for decimals, measures and integers of any size • Be able to estimate calculations by rounding • Understand order of operations **Algebra** Students will: • Be able to use the basic rules of algebra	Topic tests In class formative assessment using Mini Whiteboards
	2	**Number** Students will: • Be able to use addition and subtraction, including formal written methods, applied to integers and decimals • Be able to use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple **Perimeter** Students will: • Be able to calculate and solve problems involving perimeters of rectangles and compound shapes (not circles) **Algebra** Students will: • Be able to simplify and manipulate algebraic expressions to maintain equivalence by multiplying a single term over a bracket or by taking out common factors	TOPIC tests In class formative assessment

	3	Number Students will: • Be able to use Multiplication and Division, including formal written methods, applied to integers, decimals Area Students will: • Be able to derive and apply formulae to calculate and solve problems involving area of triangles, rectangles and parallelograms Mean Students will: • Be able to describe, interpret and compare observed distributions of a single variable through the use of the mean	TOPIC tests In class formative assessment

	4	**Fractions** Students will: • Be able to express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1 • Be able to use addition and subtraction, including formal written methods, applied to proper and improper fractions, and mixed numbers • Be able to compare and order fractions by creating common denominators Be able to interpret fractions and percentages as operators	TOPIC tests In class formative assessment
	5	**Co-ordinates** Students will: • Be able to identify and plot co-ordinates in four quadrants **Polygons** Students will: • Be able to derive, describe and illustrate properties of triangles, quadrilaterals and other plane figures (for example, equal lengths and angles) using appropriate language and technologies **Angles** Students will: • Be able to apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles	TOPIC tests In class formative assessment
	6	**Time** Students will: • Be able to tell the time in 12 and 24 hour clock • Be able to interpret timetables	TOPIC tests In class formative assessment

8	1	**Number** Students will: • Be able to use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations • Be able to use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, HCF, LCM, prime factorisation, including using product notation and the unique factorisation property • Be able to round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures] • Understand Negative Number Manipulation **Fractions** Students will: • Be able to multiply and divide fractions and mixed numbers	TOPIC tests In class formative assessment
	2	**Equations and Expressions** Students will: • Be able to model situations or procedures by translating them into algebraic expressions or formulae and by using graphs • Be able to use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement) **Co-ordinates** Students will: • Understand co-ordinates and developing algebraic relationships **Measurement** Students will: • Be able to use standard units of mass, length, time, money and other measures, including with decimal quantities	TOPIC tests In class formative assessment

	3	**Angles** Students will: • Understand and use the relationship between parallel lines and alternate and corresponding angles • Understand and use interior and exterior angles of polygons **Circumference** Students will: • Be able to calculate and solve problems involving perimeters of 2-D shapes (including circles) and composite shapes **Proportion** Students will: • Be able to use best buys, recipes and currency • Be able to use standard units of mass, length, time, money and other measures (including standard compound measures) using decimal quantities where appropriate	TOPIC tests In class formative assessment
	4	**Ratio** Students will: • Be able to 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 • Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction **Fractions, Decimals and Percentages** Students will: • Be able to solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics • Be able to work with calculators and percentages	TOPIC tests In class formative assessment

	5	Area Students will: • Be able to derive and apply formulae to calculate and solve problems involving area of triangles, parallelograms, trapezia and (part)circles Data and Graphs Students will: • Be able to construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts and vertical line (or bar) charts for ungrouped and grouped numerical data Averages Students will: • Be able to describe, interpret and compare observed distributions of a single variable through appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers)	TOPIC tests In class formative assessment
	6	3D visualisation Students will: • Be able to use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D Volume Students will: • Be able to derive and apply formulae to calculate and solve problems involving volume of cuboids (including cubes) and other prisms (including cylinders)	TOPIC tests In class formative assessment
	1	Whole numbers and Decimals Students will: • Understand and manipulate decimals • Be able to estimate and round numbers to an appropriate degree of accuracy including use in calculations, limits of accuracy and related calculations • Be able to identify the HCF and LCM of large numbers	TOPIC tests In class formative assessment

9		Fractions Students will: • Be able to manipulate fractions including using the four rules and equivalence	
	2	Algebra Students will: • Understand and use algebraic notation • Understand, know and use laws of indices • Be able to expand & Factorise •	TOPIC tests In class formative assessment
	3	Algebra Students will: • Be able to simplify expressions and use substitution to solve problems Proportion Students will: • Be able to solve problems involving direct and inverse proportion, including graphical and algebraic representations Probability Students will: • Be able to apply systematic listing strategies • Be able to describe probability using the probability scale, tables and frequency trees • Be able to calculate expected outcomes • Be able to use mutually exclusive events sum to one • Be able to calculate experimental and theoretical probability • Be able to use sets and combinations of sets using Venn diagrams	TOPIC tests In class formative assessment

| | 4 | Standard form
Students will:
• Be able to convert large and small numbers into standard form and vice versa
• Be able to add and subtract numbers in standard form
• Be able to multiply and divide numbers in standard form
• Be able to use of a calculator in standard form calculations

Algebra
Students will:
• Be able to solve linear Equations
• Be able to express, use and solve linear Inequalities

Sequences
Students will:
• Be able to generate terms of a sequence from either a term-to-term or a position-to-term rule
• Be able to write the term-to-term definition of a sequence in words
• Be able to find the nth term of a linear sequence e.g. 3, 5, 7, 9…
• Be able to recognise and use sequences of triangular, square and cube numbers
• Be able to use the nth term of an arithmetic sequence to decide if a given number is a term in the sequence, or find the first term over a certain number
• Be able to use the nth term of an arithmetic sequence to find the first term greater/less than a certain number

Pythagoras
Students will:
• Be able to understand and use Pythagoras theorem | TOPIC tests
In class formative assessment |

| | 5 | Angle facts
Students will:
Be able to calculate interior and exterior angles, angle sums
Algebra
Students will:
Be able to solve more complex linear Equations
Basic Vectors
Students will:
Be able to describe translations as 2D vectors
Be able to translate a given shape by a vector
Be able to use addition and subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representations of vectors
Be able to represent information graphically given column vectors
Be able to identify two column vectors which are parallel
Transformations
Students will:
Understand and use reflection and rotation symmetry Understand and use transformations - rotation, reflection, translation, enlargement Be able to identify the equation of a line of symmetry Be able to identify the scale factor of an enlargement of a shape as the ratio of the lengths of two corresponding sides, simple integer scale factors, or simple fractions | TOPIC tests
In class formative assessment |
| | 6 | Circles
Students will:
Know circle definitions - centre, radius, chord, diameter, circumference, tangent, arc, sector and segment Be able to use Circumference of a circle = $2\pi r = \pi d$ and area of a circle = πr^2 | TOPIC tests
In class formative assessment |

		• Be able to calculate arc lengths, angles and areas of sectors of circles Surface Area Students will: • Be able to estimate surface areas by rounding measurements to 1 significant figure • Be able to sketch nets of cuboids and prisms Plans & Elevations Students will: • Be able to identify properties of the faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres • Be able to draw sketches of 3D solids • Be able to interpret Plans and elevations of 3D shapes • Be able to construct plans and elevations of 3D shapes	
10	1	Algebra Students will: • Be able to rearrange Formulae • Understand and use linear Graphs including $y = mx + c$ • Understand linear simultaneous equations Volume 2	TOPIC tests In class formative assessment
	2	Algebra Students will: • Be able to draw and Interpret quadratic graphs, turning points and roots • Understand more complex Graphs • Understand and use compound Measures • Be able to expand, factorise & manipulate Algebraic Fractions (Higher only)	TOPIC tests In class formative assessment
	3	Probability Students will: • Be able to apply systematic listing strategies	TOPIC tests In class formative assessment

- Be able to describe probability using the probability scale, tables and frequency trees
- Be able to calculate expected outcomes
- Be able to use mutually exclusive events sum to one
- Be able to calculate experimental and theoretical probability
- Be able to use sets and combinations of sets using Venn diagrams

Statistics
Students will:
- Be able to draw and Interpret Frequency tables, bar charts, composite bar charts, pie charts, pictograms, vertical line charts, stem and leaf (including back-to-back)
- Understand Mean, mode, median, modal class
- Understand Range and outliers
- Be able to compare the mean, median, mode and range (as appropriate) of two distributions using bar charts, dual bar charts, pictograms and back-to-back stem and leaf
- Be able to recognise the advantages and disadvantages between measures of average
- Be able to scatter graphs - recognise correlation
- Be able to recognise types of data: primary secondary, quantitative and qualitative
- Understand sample and population
- Understand Listing combinations
- Understand Sampling - infer properties of populations or distributions from a sample, while knowing the limitations of sampling
- Be able to interpret and construct tables and line graphs for time series data
- Understand Scatter graphs - draw estimated lines of best fit; make predictions; interpolate and extrapolate apparent trends while knowing the dangers of so doing
- Understand cumulative frequency
- Understand Box plots (Higher only)

Further Proportion (Higher only)
Students will:
- Be able to interpret equations and graphs that describe direct and inverse proportion
- Be able to identify direct proportion from a table of values, by comparing ratios of values, for x squared and x cubed relationships

		• Be able to write statements of proportionality for quantities proportional to the square, cube or other power of another quantity • Be able to use y = kx to solve direct proportion problems, including questions where students find k, and then use k to find another value • Be able to solve problems involving inverse proportionality Standard form (Higher 2023/24 only) Students will:	
	4	Standard form (foundation only) Students will: Ratio (further) Students will: • Be able to simplify ratios • Be able to divide a quantity into a given ratio • Be able to write ratios as fractions • Be able to compare lengths, areas and volumes using ratio notation and scale factors • Be able to solve ratio problems involving the change of a ratio within a question • Be able to relate ratios to fractions and to linear functions • Be able to solve complex multi-step problems involving fractions and probability (Higher only) Growth & Decay Students will: • Be able to set up, solve and interpret the answers in growth and decay problems, including compound interest • Be able to identify the interest rate in compound interest questions • Be able to set up, solve and interpret the answers in growth and decay problems Similar Shapes (Higher only)	TOPIC tests In class formative assessment

		- Understand and use SSS, SAS, ASA and RHS conditions to prove the congruence of triangles using formal arguments, and to verify standard ruler and pair of compasses constructions; - Be able to solve angle problems by first proving congruence; - Understand similarity of triangles and of other plane shapes, and use this to make geometric inferences; - Be able to prove that two shapes are similar by showing that all corresponding angles are equal in size and/or lengths of sides are in the same ratio/one is an enlargement of the other, giving the scale factor; - Be able to use formal geometric proof for the similarity of two given triangles; - Understand the effect of enlargement on angles, perimeter, area and volume of shapes and solids; - Be able to identify the scale factor of an enlargement of a similar shape as the ratio of the lengths of two corresponding sides, using integer or fraction scale factors; - Be able to write the lengths, areas and volumes of two shapes as ratios in their simplest form; - Be able to find missing lengths, areas and volumes in similar 3D solids; - Know the relationships between linear, area and volume scale factors of mathematically similar shapes and solids; - Be able to use the relationship between enlargement and areas and volumes of simple shapes and solids; - Be able to solve problems involving frustums of cones where you have to find missing lengths first using similar triangles.	
	5	Pythagoras Review (foundation only) Students will: Be able to understand and use Pythagoras theorem Further Proportion (Higher only) Students will: Be able to set up and use equations to solve word and other problems involving direct proportion or inverse proportion	TOPIC tests In class formative assessment

Bearings and scale drawings (foundation only)

Students will:

- Know and use compass directions
- Be able to use three-figure bearings to specify direction
- Be able to mark on a diagram the position of point B given its bearing from point A
- Be able to give a bearing between the points on a map or scaled plan
- Be able to given the bearing of a point A from point B, work out the bearing of B from A
- Be able to use accurate drawing to solve bearings problems
- Be able to solve locus problems including bearings

Surds (Higher only)

Students will:

- Be able to simplify and manipulate algebraic expressions involving surds
- Be able to simplify surd expressions involving squares (e.g. $\sqrt{12} = \sqrt{(4 \times 3)} = \sqrt{4} \times \sqrt{3} = 2\sqrt{3}$)
- Understand surd notation, e.g. calculator gives answer to sq. rt 8 as 4 rt 2
- Be able to expand and simplify single and double brackets involving surd manipulation
- Be able to rationalise denominators

Right Angled Trigonometry (Higher only)

- Understand, use and recall the trigonometric ratios sine, cosine and tan, and apply them to find angles and lengths in general triangles in 2D figures;
- Be able to use the trigonometric ratios to solve 2D problems;
- Be able to Find angles of elevation and depression;
- Know the exact values of $\sin\theta$ and $\cos\theta$ for $\theta = 0°$, $30°$, $45°$, $60°$ and $90°$; know the exact value of $\tan\theta$ for $\theta = 0°$, $30°$, $45°$ and $60°$.

6	End of Year revision programme (foundation)	TOPIC tests In class formative assessment

Bearings and scale drawings (foundation only)

Students will:

- Know and use compass directions
- Be able to use three-figure bearings to specify direction
- Be able to mark on a diagram the position of point B given its bearing from point A
- Be able to give a bearing between the points on a map or scaled plan
- Be able to given the bearing of a point A from point B, work out the bearing of B from A
- Be able to use accurate drawing to solve bearings problems
- Be able to solve locus problems including bearings

Bounds (Higher only)

Students will:

- Be able to calculate the upper and lowers bounds of numbers given to varying degrees of accuracy
- Be able to calculate the upper and lower bounds of an expression involving the four operations
- Be able to find the upper and lower bounds in real-life situations using measurements given to appropriate degrees of accuracy
- Be able to find the upper and lower bounds of calculations involving perimeters, areas and volumes of 2D and 3D shapes
- Be able to calculate the upper and lower bounds of calculations, particularly when working with measurements

Quadratic sequences (Higher only)

- Continue a quadratic sequence and use the nth term to generate terms;
- Continue a quadratic sequence and use the nth term to generate terms;
- Find the nth term of quadratic sequences;

11	1	Transformations 2 Foundation (2023/24)	GCSE paper 1 non-calculator

Transformations 2 Foundation (2023/24)

Pythagoras
Students will:

- Be able to understand and use Pythagoras theorem

Right Angled Trigonometry
- Understand, use and recall the trigonometric ratios sine, cosine and tan, and apply them to find angles and lengths in general triangles in 2D figures;
- Be able to use the trigonometric ratios to solve 2D problems;
- Be able to find angles of elevation and depression;
- Know the exact values of sin θ and cos θ for θ = 0°, 30°, 45°, 60° and 90°; know the exact value of tan θ for θ = 0°, 30°, 45° and 60°.
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Bearings and scale drawings
Students will:
- Know and use compass directions
- Be able to use three-figure bearings to specify direction
- Be able to mark on a diagram the position of point B given its bearing from point A
- Be able to give a bearing between the points on a map or scaled plan
- Be able to given the bearing of a point A from point B, work out the bearing of B from A
- Be able to use accurate drawing to solve bearings problems
- Be able to solve locus problems including bearings

Higher
Algebraic Proof
Students will:
- Understand the language of proof: odd, even, product, sum, integer, consecutive, square, difference etc.
- Be able to solve 'Show that' and proof questions using consecutive integers (n, n + 1), squares a2, b2, even numbers 2n, odd numbers 2n +1

Solving Quadratics & Further Simultaneous Equations

Students will:

- Be able to solve quadratic equations algebraically by factorising (no rearrangement required)
- Be able to find approximate solutions to quadratic equations using a graph
- Be able to solve quadratic equations (that also require rearrangement) by factorising, completing the square and by using the quadratic formula
- Be able to solve linear/quadratic simultaneous equations
- Be able to solve quadratic equations arising from algebraic fraction equations
- Be able to identify from a graph if a quadratic equation has any real roots
- Be able to solve linear/circles simultaneous equations

Functions

Students will:

- Be able to find $f(x) + g(x)$ and $f(x) - g(x)$, $2f(x)$, $f(3x)$ etc. algebraically
- Be able to find the inverse of a linear function
- Know that $f^{-1}(x)$ refers to the inverse function
- Understand composite functions - for two functions $f(x)$ and $g(x)$, find $gf(x)$

Iteration

Students will:

- Be able to find approximate solutions to equations numerically using iteration
- Be able to use iteration with simple converging sequences

Quadratic Inequalities

Students will:

- Be able to sketch a graph of a quadratic function, by factorising or by using the formula, identifying roots, y-intercept and turning point by completing the square
- Be able to solve quadratic inequalities in one variable, by factorising and sketching the graph to find critical values

		• Be able to represent the solution set for inequalities using set notation, i.e. curly brackets and 'is an element of' notation e.g. the solution set of $x^2 - 3x - 10 < 0$ as {x: x < -3} {x: x > 5}	
	2	**Foundation** Transformations Students will: • Understand and use reflection and rotation symmetry • Understand and use transformations - rotation, reflection, translation, enlargement • Be able to identify the equation of a line of symmetry • Be able to identify the scale factor of an enlargement of a shape as the ratio of the lengths of two corresponding sides, simple integer scale factors, or simple fractions Congruence Students will: • Be able to identify congruent shapes by eye • Understand that distances and angles are preserved under reflections, so that any figure is congruent under this transformation • Know and use congruence criteria for triangles (SSS, SAS, ASA, RHS) • Be able to solve angle problems involving congruence **Higher** Bearings & Scale drawings Students will: • Be able to interpret maps and scale drawings • Be able to estimate lengths using a scale diagram • Be able to make an accurate scale drawing from a diagram • Know and use compass directions • Be able to use three-figure bearings to specify direction • Be able to mark on a diagram the position of point B given its bearing from point A • Be able to give a bearing between the points on a map or scaled plan • Be able to given the bearing of a point A from point B, work out the bearing of B from A • Be able to use accurate drawing to solve bearings problems	Full GCSE past paper set

- Be able to solve locus problems including bearings

Circle Theorems
Students will:
- Be able to apply and prove the standard circle theorems concerning angles, radii, tangents and chords, and use them to prove related results

Further Trigonometry & Trigonometric Graphs
Students will:
- Understand and use sine rule and cosine rule
- Be able to calculate area of a triangle using trigonometry. Also use to find sides or angles of any triangle
- Be able to sketch and interpret graphs of the trigonometric functions y = sin x, y = cos x and y= tan x
- Be able to apply sine and cosine rule to questions involving bearings
- Be able to apply trigonometry in 3D configurations

	3	**Foundation**	Fortnightly GCSE past papers, pre-seen and unseen

Vectors
Students will:
- Understand addition and subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representations of vectors
- Be able to represent information graphically given column vectors
- Be able to identify two column vectors which are parallel

Similar Shapes
Students will:
- Be able to understand that similar shapes are enlargements of each other and angles are preserved – define similar in this unit
- Be able to identify shapes which are similar; including all circles or all regular polygons with equal number of sides

- Be able to apply the concepts similarity, including the relationships between lengths in similar figures
- Understand similarity of triangles and of other plane shapes, use this to make geometric inferences, and solve angle problems using similarity
- Understand the effect of enlargement on perimeter of shapes
- Be able to solve problems to find missing lengths in similar shapes

Constructions & Loci

Students will:

- Be able to draw circles and arcs to a given radius or given the diameter
- Be able to measure and draw lines, to the nearest mm
- Be able to measure and draw angles, to the nearest degree
- Be able to use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle)
- Be able to construct angles of 90°, 45°
- Be able to use constructions to construct given figures and solve loci problems; know that the perpendicular distance from a point to a line is the shortest distance to the line

Higher

Statistics (Further)

Students will:

- Be able to draw and interpret Histograms
- Be able to draw and interpret cumulative frequency graphs
- Be able to draw, interpret and compare Box plots
- Be able to calculate range, quartiles and inter-quartile range

Transformations

Students will:

- Understand and use reflection and rotation symmetry
- Understand and use transformations - rotation, reflection, translation, enlargement
- Be able to identify the equation of a line of symmetry
- Be able to identify the scale factor of an enlargement of a shape as the ratio of the lengths of two corresponding sides, simple integer scale factors, or simple fractions

		• Be able to describe the changes and invariance achieved by combinations of rotations, reflections and translations Congruence Students will: • Be able to identify congruent shapes by eye • Understand that distances and angles are preserved under reflections, so that any figure is congruent under this transformation • Understand and use congruence criteria for triangles (SSS, SAS, ASA, RHS) • Be able to solve angle problems involving congruence Vectors Students will: • Understand addition and subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representations of vectors • Be able to represent information graphically given column vectors • Be able to identify two column vectors which are parallel • Be able to solve geometric problems in 2D where vectors are divided in a given ratio • Be able to produce geometrical proofs to prove points are collinear and vectors/lines are parallel	
	4	Foundation End of GCSE revision programme Higher Gradients (Further), and area under a graph Students will: • Be able to recognise and use the equation of a circle with centre at the origin • Be able to find the equation of a tangent to a circle at a given point • Be able to estimate area under a quadratic or other graph by dividing it into trapezia. Interpret the results in cases such distance–time graphs, velocity–time graphs and graphs in financial contexts • Be able to interpret the gradient of linear or non-linear graphs, and estimate the gradient of a quadratic or non-linear graph at a given point by sketching the tangent and finding its gradient	Fortnightly GCSE past papers, pre-seen and unseen Full GCSE past paper set

		- Be able to interpret the gradient of non-linear graph in curved distance–time and velocity–time graphs Kinematics Students will: - Be able to use kinematics formulae from the formulae sheet to calculate speed, acceleration, etc. (with variables defined in the question) Graphical transformations Students will: - Be able to translate and reflect functions Constructions & Loci Students will: - Be able to draw circles and arcs to a given radius or given the diameter - Be able to measure and draw lines, to the nearest mm - Be able to measure and draw angles, to the nearest degree - Be able to use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle) - Be able to construct angles of 90°, 45° - Be able to use constructions to construct given figures and solve loci problems; know that the perpendicular distance from a point to a line is the shortest distance to the line	
	5	Foundation and Higher End of GCSE revision programme	
	6		