

Maths Curriculum Map KS4 (2026 - 2027)

	Year 10 Foundation	Year 11 Foundation	Year 10 Higher	Year 11 Higher
Autumn 1	<u>HCF/LCM</u> - Recap finding factors and multiples of different numbers - Represent numbers as products of their prime factors - Find HCF of two or more different numbers by listing - Find HCF of two or more different numbers using a Venn - Find LCM of two or more different numbers by listing - Find LCM of two or more different numbers using a Venn - Look at GCSE questions involving HCF and LCM	<u>Factors, Multiples and Primes</u> - Be able to find represent a number as a product of its prime factors - Be able to find the highest common factor of two or more values by listing - Be able to find the lowest common multiple of two or more values by listing - Be able to find the highest common factor and lowest common multiple using prime factor decomposition	<u>HCF/LCM</u> - Recap finding factors and multiples of different numbers - Represent numbers as products of their prime factors - Find HCF of two or more different numbers by listing - Find HCF of two or more different numbers using a Venn - Find LCM of two or more different numbers by listing - Find LCM of two or more different numbers using a Venn - Look at GCSE questions involving HCF and LCM	<u>Surds</u> - Be able to simplify surds - Be able to multiply and divide surds - Be able to add and subtract surds - Be able to expand brackets involving surds - Experience linking surds to other mathematical concepts, such as area, volume and Pythagoras - Rationalise denominators containing a single term - Rationalise denominators containing two terms
	<u>Expressions and Indices</u> - Pupils will be able to write numbers as powers of other numbers - Pupils will use index laws to simplify numerical expressions - Pupils will use index laws to simplify algebraic expressions - Pupils will be able to write numbers in standard form - Pupils will be able to write standard form as ordinary numbers - Pupils will be able to order numbers in standard form - Pupils will be able to calculate in standard form - Pupils will be able to answer exam questions on standard form	<u>Calculating with Fractions</u> - Be able to convert between mixed numbers and improper fractions - Be able to add and subtract mixed fractions - Be able to multiply mixed fractions - Be able to divide mixed fractions - Be able to apply fractions to other mathematical concepts such as area, perimeter and algebra - Ordering fractions including mixed numbers	<u>Expressions and Indices</u> - Pupils will be able to write numbers as powers of other numbers - Pupils will use index laws to simplify numerical expressions - Pupils will use index laws to simplify algebraic expressions - Pupils will be able to write numbers in standard form - Pupils will be able to write standard form as ordinary numbers - Pupils will be able to order numbers in standard form - Pupils will be able to calculate in standard form - Pupils will be able to answer exam questions on standard form	<u>Equations</u> - Be able to solve a quadratic equation by factorising, including when the coefficient of x is equal to or greater than one - Be able to factorise using the difference of two squares - Be able to solve quadratic equations using the quadratic formula - Solve quadratic equations graphically - Be able to solve equations by completing the square - Find the turning point of a graph by completing the square - Solve simultaneous equations where one or both is a quadratic - Link solving quadratic equations to higher level geometry and probability questions
	<u>Fractions</u> To be able to add and subtract fractions with different denominators	<u>Equations and Expressions</u> - Solving Simplify and manipulate algebraic expressions - Simplify expressions using index laws - Solve a two-step equation - Solve an equation with an unknown on both sides - Solving equations with unknowns in the denominator - Forming and solving equations - Factorising to solve quadratic	<u>Fractions</u> To be able to calculate using fractions	

Maths Curriculum Map KS4 (2026 - 2027)

	- To be able to multiply fractions - To be able to divide fractions - To answer GCSE and functional questions on the topic of fractions	equations where the coefficient of $x = 1$ - Solving quadratics, graphically - Solving simultaneous equations using the elimination method	using the four operations - To convert recurring decimals to fractions - To calculate with recurring decimals when converted to fractions - To answer GCSE and functional questions on the topic of fractions	
Autumn 2	<u>Expressions</u> - To be able to expand and simplify expressions involving brackets. - To be able to factorise expressions into brackets. - To be able to expand double brackets - To be able to factorise quadratics, including where $a = 1$ <u>Scatter Graphs</u> - How to plot a scatter graph - How to identify an outlier - How to draw a line of best fit - How to interpret scatter graphs - How to use scatter graphs to identify outliers <u>Ratio</u> - To know how to write two quantities in a ratio. - To know how to write ratio parts as fractions of the whole ratio. - To know how to simplify the ratio. - To know how to identify the equivalent ratio. - To know how to divide a quantity into 2 parts in a given ratio. - To know how to divide a quantity into 3 parts in a given ratio. - To know how to solve ratio problems. <u>Formula and Equations</u> - To be able to identify the current term within a formula - To be able to change the subject of a multi-step equation	<u>Angles</u> - Recap of angle calculation and regular shapes. - Calculation of angles in and on parallel lines. - Calculation and use of bearings. - Recap knowledge of parallel lines and their angles (corresponding, alternate, co-interior) - Know the rules when dealing with bearings <u>Right Angled Triangles</u> - Revision of Pythagoras with the emphasis on GCSE style questions. - The use of trigonometric ratios to calculate missing angles. - The use of trigonometric ratios to calculate missing sides. - Identification exact values of sine and cosine 30, 60 and 90 degrees. <u>Surface Area and Volume</u> - To find areas by counting squares and volumes by counting cubes. - Interpret scales on a range of measuring instruments. - Calculate and convert between metric units (ie cm to m) - Know and use the formula for area and circumference of a circle - Volume and surface area of prisms such as cubes, cuboids, triangular prisms and cylinders	<u>Expressions</u> - To be able to expand and simplify expressions involving brackets. - To be able to factorise expressions into brackets. - To be able to expand double and triple brackets - To be able to factorise quadratics, including where $a > 1$ <u>Scatter Graphs and Cumulative Frequency</u> - How to plot a scatter graph - How to identify an outlier - How to draw a line of best fit - How to interpret scatter graphs - How to use scatter graphs to identify outliers - Use cumulative frequency graphs - Use and draw box plots <u>Surds</u> - Pupils will be able to simplify Surds - Pupils will be able to multiply and divide Surds - Pupils will be able to add and subtract surds - Pupils will be able to expand brackets containing surds <u>Formula and Equations</u> - To be able to identify the current term within a formula - To be able to change the subject of a	<u>Algebraic Fractions</u> - Be able to simplify algebraic fractions by factorising into one bracket - Be able to simplify algebraic fractions by factorising into two brackets - Understand that the 'rules' for calculating with algebraic fractions, are the same as the 'rules' for calculating with normal fractions - Be able to add and subtract algebraic fractions - Be able to multiply algebraic fractions - Be able to divide algebraic fractions <u>Trigonometry</u> - Use Pythagoras and trig to solve more complex 2D problems. - Using Pythagoras and trig ratios to solve 3D problems - Calculate exact values of sin, cos and tan of common angles - Using sine and cosine formulae for non-right angled triangles - Using the formula for the area of any triangle

Maths Curriculum Map KS4 (2026 - 2027)

	- To be able to change the subject of a multi-step equation, involving squares and roots - To be able to solve two step linear equations - Solve an equation with an unknown on both sides - Solving equations with unknowns in the denominator - Forming and solving equations.		- multi-step equation - To be able to change the subject of a multi-step equation, involving squares and roots - Solve an equation with an unknown on both sides - Forming and solving equations - To be able to factorise quadratics, including where $a > 1$ - To be able to solve quadratics by factorising - To solve simultaneous equations using any method including graphically	
Spring 2	<u>Area and Perimeter</u> - Pupils will be able to find the perimeter of 2D shapes - Pupils will be able to find the perimeter of compound shapes (rectilinear) - Pupils will be able to find the area of 2D shapes - Pupils will be able to find the area of compound shapes - Pupils will be able to find the circumference of a circle - Pupils will be able to find the area of a circle - Pupils will be able to work with sectors (Halves and Quarters) - Pupils will find missing lengths and heights when given the area and perimeter <u>Trigonometry</u> - To know how to find the hypotenuse when given the shorter sides on a right-angled triangle using Pythagoras' Theorem. - To know how to find a shorter side on a right-angled triangle when given the hypotenuse and one other side. - To know to use Pythagoras' Theorem in	<u>Statistical Diagrams</u> - To use the correct notation for time using 12- and 24-hour clocks. - Bable to draw and interpret pictograms, bar chart, and line graphs - To extract information from tables and diagrams - Work out the mode, median and mean - The construction and interpretation of pie charts - The construction and interpretation of scatter graphs' - Working with grouped data and averages <u>Indices and Roots</u> - Students should have knowledge of integer complements to 10 and to 100, multiplication facts to 10×10, strategies for multiplying and dividing by 10, 100 and 1000. - Squares, square roots, cubes and cube roots and have knowledge of classifying integers - Understand square root as an opposite to squaring (encountered in Pythagoras)	<u>Area and Perimeter</u> - Pupils will be able to find the perimeter of 2D shapes - Pupils will be able to find the perimeter of compound shapes (rectilinear) - Pupils will be able to find the area of 2D shapes - Pupils will be able to find the area of compound shapes - Pupils will be able to find the circumference of a circle - Pupils will be able to find the area of a circle - Pupils will be able to work with sectors - Pupils will find missing lengths and heights when given the area and perimeter <u>Trigonometry</u> - To know how to find the hypotenuse when given the shorter sides on a right-angled triangle using Pythagoras' Theorem. - To know how to find a shorter side on a right-angled triangle when given the hypotenuse and one other side.	<u>Circle Theorems</u> - To know what subtended means - To be able to work with all seven circle theorems in order to find missing angles <u>Linear and Quadratic Inequalities</u> - Understand the concept of inequality. - Representing a solution to an inequality on a number line. - Graphical inequalities and identifying regions. - Solve a linear inequality - Solve a quadratic inequality - Identification of an inequality represented by two or more variables giving a region. - Using trial and improvement to find a solution to an inequality. <u>Functions</u>

Maths Curriculum Map KS4 (2026 - 2027)

	exam questions and different contexts - To know how to identify which trigonometric ratio is required for a given problem. - To know how to use the trigonometric ratio to find missing sides or angles in right-angled triangles. - To be able to find, and recall the exact values of trigonometry	- Recap of the notation of a power and the extension from square to any power - Calculate using powers (multiplication and division process including brackets) <u>Standard Form</u> - Showing small and large numbers in standard form - Calculating with standard form	- To know to use Pythagoras' Theorem in exam questions and different contexts - To know how to apply Pythagoras' Theorem to find missing lengths on or inside cubes and cuboids. - Be able to use 3D Pythagoras - To know how to identify which trigonometric ratio is required for a given problem. - To know how to use the trigonometric ratio to find missing sides or angles in right-angled triangles. - Multi-step questions involving Pythagoras and Trigonometry - To be able to find, and recall the exact values of trigonometry - Graphs of trigonometric functions <u>Percentages</u> - Write percentage change as a multiplier - Be able to recap finding a percentage of an amount, both on a calculator and using mental methods - Understand what the term original means - To be able to find the original cost of an amount increased by a percentage - Be able to define the terms increase, and decrease - Be able to calculate reverse percentage problems - Be able to find the percentage increase or decrease - Be able to answer multi step problems involving percentages - Work with simple and compound interest	- Substituting into functions - Substituting into composite functions - Finding composite functions - Finding inverse functions
--	---	---	---	--

Swinton

Maths Curriculum Map KS4 (2026 - 2027)

Spring 4	<u>Percentages</u> • Write percentage change as a multiplier • Be able to recap finding a percentage of an amount, both on a calculator and using mental methods • Understand what the term original means • To be able to find the original cost of an amount increased by a percentage • Be able to define the terms increase, and decrease • Be able to calculate reverse percentage problems • Be able to find the percentage increase or decrease • Be able to answer multi step problems involving percentages • Work with simple and compound interest <u>Proportion</u> • Working with speed, distance and time • Direct and inverse proportion • Unitary method • Best Buys • Ingredient Questions	<u>Ratio, Proportion and Compound Measures</u> • Simplify ratios. • Show ratios as fractions. • Share in a given ratio, including when a value needs converting • Work with ratios that have a crossover (ie ratio houses to flats is 1:2 and flats to terraced is 5 : 8) • Extension involving interest and compound measures. • Best buy questions • Recipe questions <u>Sequences and Linear Graphs</u> • Recap the nth term of linear sequences, all styles of questions should be explored, pupils should be fully conversant with the use of the nth term. • Finding and using the nth term of a quadratic sequence. • Completing a sequence using a table of coordinates • Plotting linear sequences on a graph <u>Transformations</u> • Translation in all four quadrants using vector notation. • 2D shape rotational and line symmetry. • Reflections in all four quadrants • Rotations in all four quadrants • Enlargements in all four quadrants • Students should be fully conversant with measuring lines and angles accurately. • Translation in all four quadrants using vector notation.	<u>Percentages</u> • Write percentage change as a multiplier • Be able to recap finding a percentage of an amount, both on a calculator and using mental methods • Understand what the term original means • To be able to find the original cost of an amount increased by a percentage • Be able to define the terms increase, and decrease • Be able to calculate reverse percentage problems • Be able to find the percentage increase or decrease • Be able to answer multi step problems involving percentages • Work with simple and compound interest <u>Ratio and Proportion</u> • Direct and inverse proportion expressed graphically. • Best buys. • Use of proportion with compound measures. • The use of indirect/inverse proportion • Calculation of direct and indirect proportion also using the constant • Direct and inverse proportion • Unitary method	<u>Algebraic Proof</u> • Writing algebraic proof for different statements - such as consecutive numbers etc. <u>Vectors</u> • Add and subtract vectors algebraically and use column vectors. • Solve geometric problems and produce proofs. • Calculation of column vectors • Resultant vector calculation • Properties of parallel vectors and parallelograms
----------	---	---	---	--

Swinton

Maths Curriculum Map KS4 (2026 - 2027)

Summer 5	<u>Angles</u> - To be able to find missing angles using basic angle factors (straight line, around a point, vertically opposite) - To be able to find missing angles in triangles and quadrilaterals - To be able to find missing angles within parallel lines - To be able to find missing interior angles in polygons - To be able to find missing exterior angles in polygons <u>Linear Graphs</u> - Plotting straight line graphs in the form $x = a$, $y = b$ and $y = x$ - Plotting straight line graphs using a table of values (including when the equation is not in the form $y = mx + c$) - Plotting a linear graph from an equation - Pupils will be able to find the gradient of a linear graph - Pupils will be able to find the gradient when given two coordinates - Pupils will be able to find the y intercept of a linear graph - Pupils will be able to find the equation of a line - Pupils will be able to identify parallel lines - To know how to find the midpoint of a line segment. <u>Averages</u> - Recap of the range and the use of the range in accuracy - Calculation of the mean, median and mode - Reading and completing stem and leaf - Use of grouped data and calculation of the averages. - Calculation from charts such stem and leaf	Revision	<u>Angles</u> - To be able to find missing angles using basic angle factors (straight line, around a point, vertically opposite) - To be able to find missing angles in triangles and quadrilaterals - To be able to find missing angles within parallel lines - To be able to find missing interior angles in polygons - To be able to find missing exterior angles in polygons <u>Linear Graphs</u> - Plotting straight line graphs in the form $x = a$, $y = b$ and $y = x$ - Plotting straight line graphs using a table of values (including when the equation is not in the form $y = mx + c$) - Plotting a linear graph from an equation - Pupils will be able to find the gradient of a linear graph - Pupils will be able to find the gradient when given two coordinates - Pupils will be able to find the y intercept of a linear graph - Pupils will be able to find the equation of a line - Pupils will be able to identify parallel lines - To know how to find the midpoint of a line segment. <u>Averages</u> - To know how to find the mode, mean, median and range. - To know how find the mode, mean, median and range from a frequency table. - To know how to find mode, mean, median and range in a grouped frequency table. - To know how to plot a frequency polygon. - To know how to plot a pictogram. - To know how to interpret a pictogram. - To know how to plot a stem and leaf	<u>Similarity, Congruence and Geometric Proof</u> - Finding the perimeter and area of similar shapes - Finding the surface area and volume of similar shape - Solving geometric problems using vectors - Geometric proofs with vectors - Geometric proofs with angle facts - Geometric proofs with congruence and similarity - Proving the circle theorem <u>Transformations</u> - Translation in all four quadrants using vector notation. 2D shape rotational and line symmetry. - Reflections in all four quadrants - Rotations in all four quadrants - Enlargements, negative and fractional in all four quadrants, also using point of enlargements other than the origin, the description of transformation. - Multiple transformations. - The use of $y = x$ for the reflection.
-------------	---	----------	--	--

Maths Curriculum Map KS4 (2026 - 2027)

			diagram. - To know how to find the mode, mean, median and range from a stem and leaf diagram. - To know how to plot a back-to-back stem and leaf diagram. - To know how to find the mode, mean, median and range from a back-to-back stem and leaf diagram. - To know how to complete and interpret a bar chart, composite or comparative bar chart.	
Summer 6	<u>Transformations</u> - Translation in all four quadrants using vector notation. 2D shape rotational and line symmetry. - Reflections in all four quadrants - Rotations in all four quadrants - Enlargements in all four quadrants, also using point of enlargements other than the origin, the description of transformation. - Multiple transformations. - The use of $y = x$ for the reflection. <u>Probability</u> - To be able to find the probability of an event happening or not happening - Use probability scales in the context of GCSE questions - To be able to confirm if events are mutually exclusive - Use sample space diagrams find probabilities - Use two way tables to find probabilities - Use tree diagrams for independent events - Venn Diagrams with set notation (U and n)	<u>Revision</u>	<u>Transformations</u> - Translation in all four quadrants using vector notation. 2D shape rotational and line symmetry. - Reflections in all four quadrants - Rotations in all four quadrants - Enlargements, negative and fractional in all four quadrants, also using point of enlargements other than the origin, the description of transformation. - Multiple transformations. - The use of $y = x$ for the reflection. <u>Functions</u> - To know that we can describe functions using function notation. - To know how to evaluate a given function. - To know how to evaluate composite functions. - To know that functions can have inverses. - To know how to find the inverse of single step functions (e.g. $f(x) = 2x$ or $g(x) = x + 3$).	<u>Revision</u>

Maths Curriculum Map KS4 (2026 - 2027)

			- To know how to find the inverse of two step functions (e.g. $f(x) = 2x + 3$) - To know how to work with functions using algebraic inputs <u>Probability</u> - To be able to find the probability of an event happening or not happening - Use probability scales in the context of GCSE questions - To be able to confirm if events are mutually exclusive - Use sample space diagrams find probabilities - Use two way tables to find probabilities - Use tree diagrams for independent events - Venn Diagrams with set notation (U and n)	
--	--	--	--	--

Co-op Academy
Swinton