



Maths Curriculum Map

Curriculum Intent Overview:								
Our mathematics curriculum will give students the opportunity to:								
• become fluent in the fundamentals of mathematics, through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately; • reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language; • can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and preserving in seeking solutions; • can communicate, justify, argue and prove using mathematical vocabulary; • develop their character, including resilience, confidence and independence, so that they contribute positively to the life of the school, their local community and the wider environment. We believe that students deserve a creative and ambitious mathematics curriculum, rich in skills and knowledge, which ignites curiosity and prepares them well for everyday life and future employment.								
		HT1	HT2	HT3	HT4	HT5	HT6	Assessment Criteria
Year 7	Unit							By end of year pupils can... (Link to Grade 7/B)
	Knowledge + Skills	S2 - Tables, charts and diagrams (12.02a) Know how to collect, represent, and interpret categorical and numerical data using a range of charts and tables. • I can construct frequency tables for categorical and numerical data. • I can draw and label bar charts and vertical line/bar charts correctly. • I can create and interpret pie charts and pictograms. • I can choose an appropriate chart to represent different types of data. • I can interpret data displays to answer questions and make comparisons. Know how to measure, estimate, classify, and accurately draw angles using appropriate mathematical tools. • I can identify and classify different types of angles.	N3 - Four operations (1.01a) Know that how the four operations (addition, subtraction, multiplication and division) are used with integers, decimals and fractions, and how they are connected through inverse operations. • I can add and subtract integers, decimals and fractions accurately. • I can multiply and divide whole numbers, decimals and simple fractions. • I can choose efficient methods for calculations, including written and mental strategies. • I can use inverse operations to check my answers. • I can solve multi-step problems involving more than one operation. • I can apply the correct order of operations in calculations. N3 - Four operations N7 - Fractions, decimals and percentages (2.02b) Know how the place value system underpins accurate calculation with	N5 - Powers and roots A1 - Algebraic notation (3.01a) Know index notation as a way of writing repeated multiplication and recognise how powers represent both whole number and negative integer exponents. • I can write repeated multiplication using index (power) notation. • I can evaluate numbers written in index form with positive integer powers. • I can apply the rules of indices for multiplying and dividing simple powers of the same base. • I can understand and use zero and negative indices in simple contexts. • I can convert between standard form of multiplication and index notation. • I can simplify expressions involving powers. N5 - Powers and roots (3.01c) Know the laws of indices and how they are used to simplify expressions involving powers with the same base. • I can multiply powers with the same base by adding the indices.	N7 - Fractions, decimals and percentages (2.01a) – Equivalent fractions Know that equivalent fractions represent the same value and can be created by multiplying or dividing the numerator and denominator by the same number. • I can recognise and identify equivalent fractions. • I can generate equivalent fractions by scaling up or down. • I can simplify fractions to their lowest terms using common factors. • I can explain why two fractions are equivalent. • I can compare fractions by converting them to equivalent forms. • I can use equivalent fractions to solve simple problems. N7 - Fractions, decimals and percentages (2.01b) = Four operations with fractions Know how fractions can be added, subtracted, multiplied and divided using common denominators, equivalent fractions and inverse operations.	N7 - Fractions, decimals and percentages (2.03a) – Converting between FDP Know that percentages, fractions and decimals are different ways of expressing proportions of a whole and can be converted between each form. • I can convert fractions into percentages. • I can convert decimals into percentages. • I can convert percentages into fractions and simplify them. • I can convert percentages into decimals and vice versa. • I can recognise common percentage equivalents (e.g. 50%, 25%, 10%). • I can use conversions to compare and solve problems involving proportions. N8 - Fractions and percentages as operators (2.03b) – Percentage increase and decrease Know how percentages are used to represent parts of a whole and how to calculate percentages of amounts, including increases and decreases.	G10 - Angle facts (8.03a) Know that angles around a point add up to 360° and can apply this fact to calculate unknown angles and justify their mathematical reasoning. • I can identify angles around a point. • I can use the fact that angles at a point total 360° to calculate missing angles. • I can solve problems involving angles around a point. • I can explain how I calculated unknown angles using mathematical vocabulary. • I can check whether my angle calculations are accurate and reasonable. G10 - Angle facts (8.03b) Know that angles on a straight line add up to 180° and can apply this fact to calculate unknown angles and justify geometric reasoning. • I can identify angles on a straight line. • I can use the fact that angles on a line total 180° to calculate missing angles. • I can solve problems involving angles on a straight line.	• I can interpret data displays to answer questions and make comparisons. • I can solve multi-step problems involving more than one operation. • I can solve multi-step problems involving decimal calculations. • I can find the HCF using factor lists and prime factorisation. • I can find the LCM using multiples lists and prime factorisation. • I can use HCF and LCM to solve real-life problems. • I can solve real-life problems involving composite shape areas • I can identify and compare single and combined transformations. • I can factorise quadratic expressions into two brackets. • I can solve multi-step problems involving fractions. • I can find the original amount given a percentage of it.

		- I can measure angles accurately using a protractor. - I can draw angles of a given size using a protractor. - I can estimate the size of angles in shapes and diagrams. - I can use angle knowledge to solve simple geometric problems. N4 - Order of operations and inverses (1.03a) Use BIDMAS to perform calculations - I can apply the order of operations to the four operations with negative integers - I can evaluate expressions involving squares cubes and roots N9 - Units, rounding and estimation (4.01a) Know how to round numbers to a given value, decimal places and significant figures - I can identify the place value of a number - I can round to the nearest integer - I can round to the nearest 10/100/1000 - I can round to a given number of decimal places - I can round to a given number of significant figures N9 - Units, rounding and estimation (4.01b) Know how to estimate calculations by rounding answers to 1 significant figure.	decimals when adding, subtracting and multiplying numbers. - I can align decimal places correctly when adding and subtracting. - I can add and subtract decimals accurately using written methods. - I can estimate answers to check whether my results are reasonable. - I can multiply decimals by whole numbers and other decimals using formal methods. - I can place the decimal point correctly in multiplication answers. - I can solve multi-step problems involving decimal calculations. N1 - Place value and ordering (1.02a) Know how the value of a digit depends on its position in a number and how numbers can be compared, ordered and rounded using place value. - I can identify the value of digits in whole numbers and decimals. - I can read, write and compare numbers up to and beyond a given number of decimal places. - I can order integers and decimals from smallest to largest and vice versa. - I can use place value to round numbers to a given number of decimal places or significant figures. - I can explain how the position of a digit affects its value. - I can use inequality symbols (<, >, =) to compare numbers correctly. N3 - Four operations N7 - Fractions, decimals and percentages (2.02c)	- I can divide powers with the same base by subtracting the indices. - I can raise a power to another power by multiplying the indices. - I can apply the zero index rule to simplify expressions. - I can use negative indices to write reciprocals as positive powers. - I can simplify expressions involving multiple index rules in a single problem. A1 - Algebraic notation A3 - Expressions, equations and inequalities (6.01a) Students know algebra uses letters, numbers, and symbols to represent unknown values and relationships in mathematical expressions and equations. - I can identify variables, coefficients, terms, and constants in an algebraic expression. - I can use algebraic vocabulary correctly when describing expressions and equations. - I can distinguish between an expression and an equation. - I can label the parts of an algebraic expression using correct terminology. - I can explain the meaning of common algebraic terms. A4 - Simplifying and manipulating expressions (6.01b) Students can identify like terms and that they can be combined to simplify algebraic expressions. - I can identify like and unlike terms in an algebraic expression. - I can combine like terms using addition and subtraction. - I can simplify sums and differences of algebraic terms.	- I can add and subtract fractions with the same and different denominators. - I can find a common denominator before adding or subtracting fractions. - I can multiply fractions by multiplying numerators and denominators. - I can divide fractions by multiplying by the reciprocal. - I can simplify fractions before and after calculations. - I can solve multi-step problems involving fractions. N8 - Fractions and percentages as operators R3 - Fractions of quantities (2.01c) Know how to find a fraction of a quantity by dividing the whole into equal parts and scaling using multiplication and division. - I can find a unit fraction of a quantity by dividing by the denominator. - I can find non-unit fractions of quantities using multiplication. - I can simplify calculations before finding a fraction of an amount. - I can use bar models or diagrams to represent fractions of quantities. - I can solve word problems involving fractions of amounts. - I can check my answers using estimation or inverse operations. N7 - Fractions, decimals and percentages (2.02a) – Converting between FDP Know the relationship between fractions and decimals and how to	- I can find a percentage of a quantity using multiplication methods. - I can calculate percentage increase and decrease. - I can find the original amount given a percentage of it. - I can solve real-life problems involving discounts, tax and profit/loss. N7 - Fractions, decimals and percentages R8 - Percentage change (2.03c) Know that percentage change shows how much a value has increased or decreased relative to its original amount. - I can calculate the amount of increase or decrease. - I can find percentage change using the formula (change ÷ original × 100). - I can identify whether a change is a percentage increase or decrease. - I can use multipliers to calculate percentage change efficiently. - I can solve real-life problems involving percentage change (e.g. prices, populations). - I can interpret percentage change in context and explain what it means.	- I can explain my reasoning using correct mathematical vocabulary. - I can check whether my angle calculations are accurate and reasonable. G10 – Angle facts (8.03c) Know and use angle facts for intersecting lines and parallel lines cut by a transversal, including vertically opposite angles, corresponding angles, alternate angles, and co-interior angles, to calculate missing angles and justify reasoning. - I can identify vertically opposite angles and explain that they are equal. - I can calculate missing angles at a point using the fact that angles on a straight line add up to 180°. - I can recognise corresponding angles when a transversal crosses parallel lines and know they are equal. - I can identify alternate (interior and exterior) angles in parallel lines and use the fact that they are equal. - I can solve problems involving missing angles in parallel lines and explain my method clearly. G11 – Angles in polygons (8.01c) Know that polygons can be classified using their properties, including regular and irregular forms, and that the sum of interior angles can be calculated using the formula (n–2) times 180° - I can identify and name common polygons using their properties. - I can describe the difference between regular and irregular polygons. - I can classify triangles and quadrilaterals using mathematical vocabulary.	- I can solve real-life problems involving discounts, tax and profit/loss. - I can solve problems involving missing angles in parallel lines and explain my method clearly. - I can calculate missing interior angles in regular and irregular polygons.
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		- I can round numbers to make estimates. - I can estimate answers to calculations using mental strategies. - I can decide whether an answer is reasonable using estimation. - I can explain the strategies I used to make an estimate. N9 - Units, rounding and estimation Calculation and estimation of powers and roots (3.01b) Know how to calculate and estimate powers and roots and use them in mathematical problems. - I can calculate squares, cubes, and simple powers of numbers. - I can find square roots and cube roots of perfect squares and cubes. - I can estimate the value of roots that are not whole numbers. - I can use powers and roots in calculations and problem-solving. - I can check whether my answers are reasonable using estimation.	Know how division with decimals works and how place value is used to divide whole numbers and decimals accurately. - I can divide whole numbers by whole numbers and interpret remainders. - I can divide decimals by whole numbers using written methods. - I can divide decimals by decimals by making the divisor a whole number. - I can move the decimal point correctly when using division methods. - I can estimate answers to check the reasonableness of my results. - I can solve word problems involving division of decimals. N2 - Factors, multiples and primes (1.02b) Know what prime numbers are, how they are different from composite numbers, and how prime numbers can be used to break down numbers into their prime factors. - I can identify prime numbers up to at least 100. - I can explain why a number is prime or composite. - I can find all factor pairs of a number. - I can use factor trees to express numbers as a product of prime factors. - I can identify common factors and common multiples using prime factorisation. - I can use knowledge of primes to solve simple number problems.	- I can use correct algebraic notation when collecting like terms. - I can explain why only like terms can be combined. A4 - Simplifying and manipulating expressions (6.01c) Know that products and quotients can be simplified using algebraic rules and notation. - I can simplify products involving numbers and variables. - I can simplify quotients involving numbers and variables. - I can use index notation correctly when simplifying expressions. - I can apply multiplication and division rules to algebraic terms. - I can write simplified expressions using correct algebraic notation. A4 - Simplifying and manipulating expressions (6.01c) Know that algebraic products and quotients can be simplified using rules for multiplying and dividing numbers and variables. - I can simplify products involving numbers, variables, and powers. - I can simplify quotients involving numbers, variables, and powers. - I can use index laws when simplifying algebraic expressions. - I can apply correct algebraic notation when writing simplified expressions. A4 - Simplifying and manipulating expressions (6.01d) – Expanding brackets	convert between them to represent the same value in different forms. - I can convert simple fractions into decimals by dividing the numerator by the denominator. - I can convert decimals into fractions and simplify them. - I can recognise common fraction–decimal equivalents (e.g. $\frac{1}{2} = 0.5$). - I can order and compare fractions and decimals. - I can use both fractions and decimals to represent the same quantity in problems. - I can choose the most appropriate form (fraction or decimal) for a given context.		- I can use the formula $(n-2) \times 180^\circ$ to calculate the sum of interior angles in polygons. - I can calculate missing interior angles in regular and irregular polygons.	
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			N2 - Factors, multiples and primes (1.02c) Know what Highest Common Factor (HCF) and Lowest Common Multiple (LCM) are and how they can be found using lists, factor pairs and prime factorisation. - I can find the factors and multiples of numbers accurately. - I can identify common factors and common multiples of two or more numbers. - I can find the HCF using factor lists and prime factorisation. - I can find the LCM using multiples lists and prime factorisation. - I can use HCF and LCM to solve real-life problems. - I can choose an efficient method (listing or prime factors) depending on the question. N3 - Four operations N7 - Fractions, decimals and percentages (2.02b) Know how the place value system applies to decimals and how this supports accurate addition, subtraction and multiplication of decimal numbers. - I can align decimal places correctly when adding and subtracting numbers. - I can add and subtract decimals accurately using written methods. - I can estimate answers to check reasonableness. - I can multiply decimals by whole numbers and other	Know that brackets indicate multiplication - I can expand single brackets using the distributive law. - I can multiply a number or variable by each term inside a bracket. - I can simplify expressions after expanding brackets. - I can use correct algebraic notation when expanding expressions. A4 - Simplifying and manipulating expressions (6.01e) – Factorising expressions Know that factorising means writing an expression as a product of simpler expressions. - I can identify the highest common factor in an expression. - I can factorise expressions by taking out a common factor. - I can check my factorised answer by expanding it. - I can write expressions in bracket form correctly. - I can use correct algebraic notation when factorising. A2 - Substitution (6.02b) Know that substitution means replacing variables in an expression with given numerical values to evaluate it. - I can replace variables with given values correctly. - I can evaluate algebraic expressions using substitution. - I can follow order of operations when substituting values. - I can use correct notation when showing substitution steps. - I can check my answers for reasonableness.				
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			decimals using formal methods. - I can place the decimal point correctly in multiplication answers. - I can solve multi-step problems involving decimal calculations. G1 - Perimeter, area and volume formulae (10.02a) Know how to calculate the perimeter of rectilinear shapes by adding the lengths of all outer sides and using properties of right angles and parallel sides. - I can identify all the sides that make up the perimeter of a rectilinear shape. - I can calculate missing side lengths using known side information. - I can add all side lengths accurately to find the perimeter. - I can break complex rectilinear shapes into simpler rectangles to help calculate perimeter. - I can use correct units when expressing perimeter. - I can solve word problems involving perimeter in real-life contexts. G1 - Perimeter, area and volume formulae Know how to find the perimeter of composite shapes by identifying all outer edges and using given or derived measurements to calculate missing lengths. - I can identify the outer perimeter of a composite shape. - I can calculate missing side lengths using known dimensions.	A4 - Simplifying and manipulating expressions – Expanding double brackets Know that quadratic expressions can be formed and solved by expanding double brackets and factorising into two binomials. - I can expand two brackets using the distributive law (FOIL method). - I can simplify quadratic expressions after expansion. - I can factorise quadratic expressions into two brackets. - I can identify pairs of numbers that multiply and add to form a quadratic. - I can check factorised forms by expanding them. A3 - Expressions, equations and inequalities (6.04a) Know that Inequalities in one variable show a range of possible values rather than a single solution. - I can write inequalities using correct symbols ($<$, $>$, $\leq$, $\geq$). - I can solve simple inequalities in one variable. - I can represent solutions on a number line. - I can interpret the meaning of inequality solutions. - I can check solutions by substituting values into the inequality. G5 - Geometrical notation and properties G7 - Properties of shapes (8.04c) - Symmetry Know that symmetry describes when a shape has a balanced pattern, either through reflection (line symmetry) or rotation (rotational symmetry). - I can identify lines of symmetry in 2D shapes. - I can complete or draw shapes that have line symmetry.				
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			• I can break composite shapes into simpler parts to help with calculations. • I can add all relevant outer sides accurately to find the perimeter. • I can avoid including internal edges in perimeter calculations. • I can solve real-life problems involving composite shape perimeters. G1 - Perimeter, area and volume formulae (10.03a) Know that the area of a triangle is half the area of a rectangle with the same base and perpendicular height, and how this is calculated using a standard formula. • I can identify the base and perpendicular height of a triangle. • I can use the formula $\text{Area} = (\text{base} \times \text{height}) / 2$ • I can calculate the area of triangles accurately using given measurements. • I can rearrange the formula to find missing base or height. • I can apply correct units when giving area (square units). • I can solve word problems involving the area of triangles. G1 - Perimeter, area and volume formulae (10.03b) Know that the area of a parallelogram is calculated using base multiplied by perpendicular height, and that it can be linked to the area of a rectangle. • I can identify the base and perpendicular height of a parallelogram. • I can use the formula $\text{Area} = \text{base} \times \text{height}$ • I can calculate the area of a parallelogram accurately.	• I can recognise shapes with rotational symmetry and state the order of rotation. • I can find missing parts of a symmetrical shape. • I can draw lines of symmetry on a coordinate grid. • I can solve problems involving symmetry in patterns and real-life contexts. G8 – Transformations – Reflections (9.01a) Know that reflection is a type of transformation where a shape is flipped over a line of symmetry, producing an image that is the same size and shape but in a mirrored position. • I can reflect a shape accurately in a given mirror line (horizontal, vertical or diagonal). • I can identify and draw lines of symmetry. • I can describe the position of a reflected shape using coordinates. • I can reflect shapes on a coordinate grid. • I can recognise that reflected shapes are congruent to the original. • I can solve problems involving multiple reflections. G8 - Transformations – Rotations (9.01b) Know that rotation is a transformation where a shape is turned about a fixed point through a given angle and direction without changing its size or shape. • I can rotate a shape about a given point (centre of rotation). • I can rotate shapes through given angles (e.g. 90°, 180°, 270°) clockwise or anticlockwise.				
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			- I can distinguish between slanted side length and perpendicular height. - I can rearrange the formula to find missing base or height. - I can solve word problems involving the area of parallelograms. G1 - Perimeter, area and volume formulae (10.03c) Know that the area of a trapezium is found by averaging the lengths of the parallel sides and multiplying by the perpendicular height. - I can identify the two parallel sides and the perpendicular height of a trapezium. - I can use the formula $\text{Area} = \frac{(a+b)}{2} \times h$ - I can calculate the area of a trapezium accurately using given values. - I can rearrange the formula to find a missing length. - I can recognise and use correct units for area (square units). - I can solve word problems involving the area of trapeziums. G1 - Perimeter, area and volume formulae G2 - Composite shapes (10.03e) Know how to find the area of composite shapes by splitting them into simpler shapes whose areas can be calculated and then combined. - I can identify and split composite shapes into basic shapes (e.g. rectangles, triangles).	- I can accurately draw the image of a rotated shape on a grid. - I can identify the centre, angle and direction of a rotation. - I can recognise that rotated shapes are congruent to the original. - I can solve problems involving rotations on coordinate grids. G8 - Transformations – Translations (9.01c) Know that translation is a transformation that moves a shape by a set distance in a given direction without changing its size, shape or orientation. - I can translate a shape using a given vector. - I can describe a translation using a column vector. - I can move shapes accurately on a coordinate grid. - I can identify the image of a translated shape. - I can recognise that translated shapes are congruent to the original. - I can solve problems involving multiple translations on a grid. G8 – Transformations – Combinations of transformations (9.01d) Know that transformations (reflection, translation, rotation and enlargement) move or change the position and size of shapes on a coordinate grid while preserving or altering properties such as size, shape and orientation depending on the transformation. - I can reflect shapes accurately in given mirror lines on a coordinate grid. - I can translate shapes using vector notation. - I can rotate shapes about a given point through				
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			- I can calculate the area of each individual shape accurately. - I can add or subtract areas to find the total area of a composite shape. - I can find missing side lengths needed for area calculations. - I can use correct units when expressing area (square units). - I can solve real-life problems involving composite shape areas	specified angles and directions. - I can enlarge shapes from a centre of enlargement using a scale factor. - I can describe transformations using correct mathematical language. - I can identify and compare single and combined transformations.				
	Prior knowledge	- Read and interpret tables, bar charts, pie charts, and pictograms. - Know basic angle types and how to use a protractor. - Understand BIDMAS/order of operations. - Be confident with negative numbers, squares, cubes, and roots. - Know place value and rounding methods. - Estimate calculations using rounding and 1 significant figure.	- Use addition, subtraction, multiplication, and division with integers, decimals, and fractions. - Understand inverse operations and BIDMAS. - Know place value, ordering, comparing, and rounding numbers. - Add, subtract, multiply, and divide decimals accurately. - Understand prime numbers, factors, multiples, HCF, and LCM. - Calculate perimeter of rectilinear and composite shapes. - Know area formulas for triangles, parallelograms, trapeziums, and composite shapes.	- Understand powers, roots, and index notation. - Apply index laws to simplify expressions. - Know basic algebra vocabulary: variables, coefficients, terms, constants. - Collect like terms and simplify algebraic expressions. - Expand brackets and factorise simple expressions. - Substitute values into expressions and formulae. - Solve and factorise simple quadratics. - Solve and represent inequalities. - Understand symmetry: line and rotational. - Perform and describe reflections, rotations, translations, and enlargements on coordinate grids.	- Understand equivalent fractions and how to simplify them. - Add, subtract, multiply, and divide fractions (including using common denominators and reciprocals). - Find fractions of quantities using division and multiplication. - Convert between fractions and decimals and recognise common equivalents. - Compare and order fractions and decimals in different forms.	- Convert between fractions, decimals, and percentages. - Recognise common percentage equivalents (e.g. 50%, 25%, 10%). - Find percentages of amounts using multiplication. - Calculate percentage increase and decrease. - Use multipliers for efficient percentage change calculations. - Work out the original value from a percentage. - Solve real-life problems involving percentages (discounts, profit, tax).	- Know angle facts: angles at a point (360°), on a line (180°), and vertically opposite angles (equal). - Use alternate and corresponding angles in parallel lines. - Solve missing angle problems using angle facts. - Classify and name polygons using their properties. - Use the formula $(n-2) \times 180^\circ$ for interior angle sums of polygons. - Find missing angles in regular and irregular polygons. - Explain angle reasoning clearly using correct vocabulary.	
	Future links	- Build on data handling: frequency tables, bar charts, pie charts, and interpreting data. - Develop understanding of angles (measuring, drawing, estimating, and using protractors). - Apply BIDMAS including negatives, powers, and roots. - Use rounding and place value to support accuracy and estimation.	- Use the four operations (add, subtract, multiply, divide) with integers, decimals, and fractions. - Understand inverse operations and use BIDMAS correctly. - Add, subtract, multiply, and divide decimals accurately using place value. - Use place value to compare, order, and round numbers. - Work with primes, factors, multiples, HCF, and LCM.	- Builds on algebra skills: indices, algebraic notation, collecting like terms, expanding and factorising. - Links index laws to simplifying algebraic expressions. - Develops solving and checking equations using substitution. - Leads into quadratic expressions (expanding and factorising). - Introduces inequalities and representing solution ranges.	- Builds understanding of equivalent fractions and simplifying fractions. - Links fraction work to decimals and percentages through conversion. - Develops adding, subtracting, multiplying, and dividing fractions. - Uses fractions to find parts of quantities and solve real-life problems. - Strengthens comparison and ordering of fractions and decimals.	- Links fractions, decimals, and percentages as equivalent forms of proportion. - Builds fluency in converting between fractions, decimals, and percentages. - Leads into calculating percentages of amounts and reverse percentage problems. - Supports real-life applications like discounts, tax, and profit/loss.	- Builds on basic angle facts (at a point, on a line, vertically opposite angles). - Links to using angles in parallel lines (alternate, corresponding, co-interior). - Leads into more complex geometric reasoning and proofs. - Supports work with polygons and interior/exterior angle problems. - Used in coordinate geometry and	

		- Estimate calculations using 1 significant figure and mental methods. - Understand and use squares, cubes, and square/cube roots in calculations.	- Calculate perimeter of rectilinear and composite shapes. - Find area of triangles, parallelograms, trapeziums, and composite shapes. - Use efficient written and mental methods, and check answers using estimation.	- Connects symmetry to transformations on coordinate grids. - Extends into reflections, rotations, translations, and combined transformations. - Supports higher-level algebra and geometry problem solving.	Supports later work with ratios, proportions, and algebraic fractions.	- Develops use of multipliers for efficient percentage calculations. - Connects to financial maths and data interpretation (growth, change, trends).	transformations involving rotations. Connects to algebraic reasoning in angle problems and multi-step geometry questions.	
	Assessment	- Students will complete a weekly Sparx Maths homework - Students will complete an end of unit assessment on tables, charts and data	- Students will complete a weekly Sparx Maths homework - Students will complete a grade indicator in December based on all content covered this year	- Students will complete a weekly Sparx Maths homework - Students will complete an end of unit assessment on algebra	Students will complete a weekly Sparx Maths homework	- Students will complete a weekly Sparx Maths homework - Students will complete an end of unit assessment on fractions and percentages	- Students will complete a weekly Sparx Maths homework - Students will complete an end of year grade indicator based on all content from the year	
Year 8	Unit	R: Ratio, Proportion and Rates Of Change A: Algebra	A: Algebra A: Graphs of Equations and Functions G: Basic Geometry	G: Mensuration G: Property of shape G1 - Perimeter, area and volume formulae G2 - Circles and composite shapes G7 - Properties of shapes G14 - 3D shapes	G: Volume	P: Probability S: Statistics	8. Basic Geometry 9. Congruence and Similarity 10. Mensuration G3 - Drawing and measuring G4 – Constructions G6 - Triangles and congruence P3 - Sets and Venn diagrams G13 - Pythagoras and trigonometry	
	Knowledge + Skills	R4 - Ratio notation (5.01a): Equivalent ratios - Write equivalent ratios. - Find missing numbers in equivalent ratios. - Reduce ratios to their simplest form. R1 - Unit conversion / N9 - Units, rounding and estimation (10.01a): Ratios with different units - Simplify ratios involving different units. R5 - Dividing in a ratio (5.01b): Division in a given ratio - Divide an amount into a ratio when given one share. - Divide an amount into a ratio when given the total. R6 - Multiplicative relationships (5.01c): Ratios and fractions - Identify the relationship between ratios and fractions. - Express ratios as fractions of a whole. R7 - Ratio, fractions and linear functions (5.01d): Solve ratio and proportion problems - Compare prices using unit cost. - Solve best value problems. R9 - Direct and inverse proportion (5.02a): Direct proportion	A7 - Linear equations (6.03a): Linear equations in one unknown - Solve one-step linear equations. - Solve two-step linear equations with positive integer solutions. - Solve two-step linear equations. - Construct and solve simple linear equations with integer coefficients and unknown on one side. - Solve linear equations with one unknown on one side including brackets and fractions. - Solve linear equations with one unknown on both sides. - Check the solution to an equation by using substitution. A6 - Modelling with algebra (6.02a): Formulate algebraic expressions and equations - Write simple equations from a problem. - Write equations involving area and perimeter of shapes. A3 - Expressions, equations and inequalities (6.04a): Inequalities in one variable - Solve two-step linear inequalities in one variable. - List the integers that satisfy an inequality. A3 - Expressions, equations and inequalities (6.04b): Inequalities in two variables	G1 - Perimeter, area and volume formulae (10.02a): Perimeter of rectilinear shapes - Recap perimeter and area skills from Year 7. - Solve functional problems by finding the area or perimeter of compound shapes made from rectangles. - Solve complex problems regarding the perimeter of given shapes. G1 - Perimeter, area and volume formulae (10.03a): Area of a triangle - Find the area of triangles. G1 - Perimeter, area and volume formulae (10.03b): Area of a parallelogram - Find the area of parallelograms. G1 - Perimeter, area and volume formulae (10.03c): Area of a trapezium - Find the area of trapeziums. G1 - Perimeter, area and volume formulae / G2 - Circles and composite shapes (10.03e): Area of composite shapes - Find the area of compound shapes. - Find the missing length of a shape when given the area. - Solve complex problems regarding the area of given shapes. G7 - Properties of shapes (8.05a): Circle nomenclature	G14 - 3D shapes (10.04a): Polyhedra and volume of cuboids - Calculate the volume of a cuboid. - Calculate the volume and surface area of cuboids and solve problems involving these. V=lwh G14 - 3D shapes (10.04b): Volume of prisms and cylinders - Calculate the volume of prisms. - Calculate the volume of prisms including cylinders. V=Ah R10 - Compound units (10.01b): Compound units - Convert compound units (e.g. m/s to km/h). - Calculate speed, distance and time. - Calculate speed, distance and time where units need converting. - Calculate density, mass and volume.	P1 - Probability experiments and scale (11.01a): The probability scale - Use the 0–1 probability scale as a measure of likelihood of random events. - Identify impossible events with probability 0. - Identify even chance with probability 0.5. - Identify certain events with probability 1. P1 - Probability experiments and scale / P2 - Sum of probabilities (11.01d): Equally likely outcomes and probability - Calculate probabilities expressed as fractions, percentages or decimals in simple experiments. - Calculate probabilities of simple combined events. P4 - Sample spaces (11.02a): Sample spaces - Use tables and grids to list the outcomes of single events. - Use tables and grids to list simple combinations of events. - Calculate theoretical probabilities from sample spaces. P2 - Sum of probabilities (11.02e): The addition law of probability - Use the addition law for mutually exclusive events. - Use $p(A)+p(\text{not } A)=1$.	G3 - Drawing and measuring (8.01e): Bearings - Draw a bearing from one position to another. - Find the bearing of point A from point B. G3 - Drawing and measuring / G4 - Constructions (8.01f): Geometrical instruments and constructions - Construct different triangles using a ruler, compass and protractor. G6 - Triangles and congruence (9.02a): Triangle constructions - Construct an ASA triangle. - Construct an SAS triangle. - Construct an SSS triangle. G13 - Pythagoras and trigonometry (10.05a): Pythagoras’ theorem - Find missing lengths and angles in right angled triangles G13 - Pythagoras and trigonometry (10.05b): Trigonometry in right-angled triangles - Apply Pythagoras and trigonometry to more complex questions	- Use proportional reasoning in context. - Construct and solve equations - Use the form $y=mx+c$ to identify parallel lines. - Read and interpret real-life linear graphs (e.g. conversion graphs). - Solve complex problems regarding the area of given shapes (including circles) - Calculate the volume of prisms including cylinders. - Calculate speed, distance and time where units need converting. - Calculate probabilities from Venn diagrams. - Interpret the mode, median, mean and range of two sets of data and make comparisons. - Apply Pythagoras and trigonometry to more complex questions

	- Solve simple direct proportion problems. - Use proportional reasoning in context. - Adapt recipes using proportion. - Solve problems involving scaling recipes. A14 - Sequences (6.06b): Special sequences - Recognise recursive sequences. - Continue Fibonacci-type sequences. A14 - Sequences (6.06a): Generate terms of a sequence - Find the nth term of a linear sequence. - Generate terms from a linear nth-term rule. - Use the nth term to solve problems. - Decide whether a number belongs to a sequence. - Find the nth term of a linear diagrammatic sequence. - Describe growing patterns algebraically. A1 - Algebraic notation / A3 - Expressions, equations and inequalities (6.01a): Algebraic terminology and proofs - Use function machines and find the output, input or function. - Form simple expressions. A4 - Simplifying and manipulating expressions (6.01b): Collecting like terms - Simplify expressions by collecting like terms, including powers. A4 - Simplifying and manipulating expressions (6.01c): Simplifying products and quotients - Simplify expressions involving multiplication and division. A2 - Substitution (6.02b): Substitute numerical values into formulae and expressions - Substitute positive integers into expressions and formulae. A4 - Simplifying and manipulating expressions (6.01d): Multiplying out brackets - Multiply a term over a single bracket. A4 - Simplifying and manipulating expressions (6.01e): Factorising - Take out common factors to factorise.	- Represent the solution of a linear inequality on a number line. A8 - Coordinates (7.01a): x- and y-coordinates - Solve simple problems on a coordinate grid. - Find the midpoint of two points. - Find the endpoint when given the midpoint and one endpoint. A11 - Straight line graphs (7.02a): Straight line graphs - Identify the equations of horizontal and vertical lines. - Use a table of values to plot graphs of simple linear functions. - Identify the y-intercept of a linear graph from the equation and the graph. - Interpret the gradient of a linear graph and identify it from the equation. - Use the form $y=mx+c$ to identify parallel lines. A10 - Graph interpretation / A13 - Graphs in context (7.04a): Graphs of real-world contexts - Read and interpret real-life linear graphs (e.g. conversion graphs).	- Recognise and name the parts of a circle. G2 - Circles and composite shapes (10.02b): Circumference of a circle - Calculate the circumference of a circle. $C=2\pi r$ G2 - Circles and composite shapes (10.03d): Area of a circle - Calculate the area of a circle. G14 - 3D shapes (8.06a): 3-dimensional solids - Recognise and complete the nets of 3D shapes. - Identify the properties of 3D shapes. G14 - 3D shapes (10.04a): Surface area of 3D shapes - Calculate the surface area of cubes and cuboids. - Calculate the surface area of prisms.		- Informally understand and apply $p(A \text{ or } B)=p(A)+p(B)-p(A \text{ and } B)$. $p(A)+p(\text{not } A)=1$ $p(A \text{ or } B)=p(A)+p(B)-p(A \text{ and } B)$ P1 - Probability experiments and scale (11.01b): Relative frequency - Record the relative frequency of outcomes of repeated experiments using tables and frequency trees. - Describe and analyse relative frequency results. - Use relative frequency as an estimate of probability. P3 - Sets and Venn diagrams (11.02c): Venn diagrams and sets - Use a two-circle Venn diagram to enumerate sets. - Calculate probabilities using Venn diagrams. - Construct a Venn diagram to classify outcomes. - Calculate probabilities from Venn diagrams. S1 - Distributions and averages (12.03a): Summary statistics - Find the mode, median and range from a list of data. - Calculate the mean from a list of data. - Interpret the mode, median, mean and range of two sets of data and make comparisons. - Identify the appropriate average to use in a given situation.	
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	Prior Knowledge	A1 - Algebraic notation A2 - Substitution A3 - Expressions, equations and inequalities A4 - Simplifying and manipulating expressions		G1 - Perimeter, area and volume formulae G2 - Circles and composite shapes				
	Future links	5.01a: Equivalent ratios 10.01a: Ratios with different units 5.01b: Division in a given ratio 5.01c: Ratios and fractions 5.01d: Solve ratio and proportion problems 5.02a: Direct proportion 6.06b: Special sequences 6.06a: Generate terms of a sequence 6.01a: Algebraic terminology and proofs 6.01b: Collecting like terms 6.01c: Simplifying products and quotients 6.02b: Substitute numerical values into formulae and expressions 6.01d: Multiplying out brackets 6.01e: Factorising	6.03a: Linear equations in one unknown 6.02a: Formulate algebraic expressions and equations 6.04a: Inequalities in one variable 6.04b: Inequalities in two variables 7.01a: x- and y-coordinates 7.02a: Straight line graphs 7.04a: Graphs of real-world contexts	10.02a: Perimeter of rectilinear shapes 10.03a: Area of a triangle 10.03b: Area of a parallelogram 10.03c: Area of a trapezium 10.03e: Area of composite shapes 8.05a: Circle nomenclature 10.02b: Circumference of a circle 10.03d: Area of a circle 8.06a: 3-dimensional solids 10.04a: Surface area of 3D shapes	10.04a: Polyhedra and volume of cuboids 10.04b: Volume of prisms and cylinders 10.01b: Compound units	11.01a: The probability scale 11.01d: Equally likely outcomes and probability 11.02a: Sample spaces 11.02e: The addition law of probability 11.01b: Relative frequency 11.02c: Venn diagrams and sets 12.03a: Summary statistics	8.01e: Bearings 8.01f: Geometrical instruments and constructions 9.02a: Triangle constructions 11.02c: Venn diagrams and sets 10.05a: Pythagoras' theorem 10.05b: Trigonometry in right-angled triangles	
	Assessment	- Weekly Sparx Maths homework - End of unit assessment on ratio	- Weekly Sparx Maths homework - End of Term assessment focusing only on what has been taught in HT1 & HT2.	Weekly Sparx Maths homework	- Weekly Sparx Maths homework - End of Term assessment focusing only on what has been taught in HT3 & HT4.	Weekly Sparx Maths homework	- Weekly Sparx Maths homework - End of Year assessment focusing on what has been taught throughout the year.	
Year 9 Foundation	Unit	1: Number, Operations and Integers 2: Fractions, Decimals and Percentages 3: Indices and Surds 4: Approximation and Estimation	1: Indices, Surds 6: Algebra	6: Algebra 12: Statistics	12: Statistics	2: Fractions, Decimals and Percentages 5: Ratio, proportion and rates of change	5: Ratio, proportion and rates of change 8: Basic Geometry	
	Knowledge + Skills	1.02b / 1.02c (N2 - Factors, multiples and primes) - Express a whole number as a product of its prime factors. - Use power notation in expressing a whole number as a product of its prime factors. - Find the HCF and LCM of two whole numbers by listing. - Find the HCF and LCM of two whole numbers from their prime factorisations. 1.01a / 2.02b / 2.02c (N3 - Four operations) - Use non-calculator methods to calculate the sum, difference, product and quotient of positive and negative whole numbers - Add, subtract, multiply decimals including negative decimals, without a calculator.	6.01 (Algebraic manipulation, simplification, expanding and factorising expressions) - Understand and use the concepts and vocabulary of expressions, equations, formulae, inequalities, terms and factors. - Recognise the difference between an equation and an identity, and show algebraic expressions are equivalent. - Use algebra to construct arguments. - Simplify algebraic expressions by collecting like terms. - Simplify algebraic products and quotients. - Simplify algebraic products and quotients using the laws of indices. - Simplify algebraic expressions by multiplying a single term over a bracket.	7.02 (Sequences and nth term) - Find a position-to-term rule for simple arithmetic sequences, algebraically or in words. - Generate a sequence from a formula for the nth term. - Find a formula for the nth term of an arithmetic sequence. - Recognise Fibonacci and quadratic sequences, and simple geometric progressions. - Use subscript notation for position-to-term and term-to-term rules. 9.02 (Scatter graphs and correlation) - Plot and interpret scatter diagrams for bivariate data. - Recognise and interpret correlation within the context of the variables, and appreciate the distinction between correlation and causation.	12.02b – Averages from Grouped data - Calculate estimates of the mean from grouped data. - Calculate estimates of the median from grouped data. - Calculate estimates of the mode from grouped data. - Calculate estimates of the range from grouped data. - Compare data sets using graphical and numerical summaries.	2.01a: Equivalent fractions - Recognise and use equivalence between simple fractions and mixed numbers. - Convert between improper fractions and mixed numbers. - Simplify fractions to their lowest terms. - Recognise equivalent fractional forms. 2.01b: Calculations with fractions - Add, subtract, multiply and divide simple fractions, including proper and improper fractions. - Calculate with mixed numbers and negative fractions. - Carry out more complex calculations involving improper fractions. - Apply the four operations to fractions in contextual problems. 2.01c: Fractions of a quantity	5.02a: Direct proportion - Solve simple problems involving quantities in direct proportion including algebraic proportions. - Solve more formal problems involving quantities in direct proportion. - Recognise that if $y=kx$, where k is a constant, then y is directly proportional to x. - Formulate equations involving direct proportion. - Interpret proportional relationships in algebraic and graphical forms. 5.02b: Inverse proportion - Solve simple word problems involving quantities in inverse proportion. - Solve simple algebraic proportion problems. - Solve more formal problems involving quantities in inverse proportion. - Recognise inverse proportional relationships	- Find the HCF and LCM of two whole numbers from their prime factorisations. - Use kinematics formulae where a is constant acceleration, u is initial velocity, v is final velocity, s is displacement and t is time taken. - Rearrange formulae to change the subject where a power or reciprocal of the subject appears. - Apply the four operations to fractions in contextual problems. - Solve problems involving fractions in real-world contexts. - Interpret percentages in

	- Divide a decimal by a whole number, including negative decimals, without a calculator. - Without a calculator, divide a decimal by a decimal. 1.03a (N4 - Order of operations and inverses) - Know the conventional order for performing calculations involving brackets, four rules and powers, roots and reciprocals. 3.02a / 3.02b (N6 - Standard form) - Use a calculator to perform calculations with numbers in standard form. - Add, subtract, multiply and divide numbers in standard form, without a calculator.	- Expand products of two binomials. - Factorise expressions - Factorise quadratic expressions of the form x^2+bx+c 6.02 (Algebraic substitution and formulae) - Substitute positive numbers into simple expressions and formulae to find the value of the subject. - Substitute positive or negative numbers into more complex formulae, including powers, roots and algebraic fractions. - Use kinematics formulae where a is constant acceleration, u is initial velocity, v is final velocity, s is displacement and t is time taken. - Formulate simple formulae and expressions from real-world contexts. - Rearrange formulae to change the subject, where the subject appears once only. - Rearrange formulae to change the subject where a power or reciprocal of the subject appears. 6.04 (Solving equations and inequalities) - Solve linear equations in one unknown algebraically. - Set up and solve linear equations in mathematical and non-mathematical contexts, including those with the unknown on both sides of the equation. Interpret solutions in context.	- Draw a line of best fit by eye, and use it to make predictions. - Interpolate and extrapolate from data, and be aware of the limitations of these techniques. - Recognise outliers on a scatter graph. 9.03 (Representing and interpreting data) - Design tables to classify data. - Interpret and construct charts appropriate to the data type, including frequency tables, bar charts, pie charts and pictograms for categorical data, and vertical line charts for ungrouped discrete numerical data. - Interpret multiple and composite bar charts. - Interpret and construct line graphs for time series data, and identify trends such as seasonal variations. 9.04 (Sampling) - Define the population in a study, and understand the difference between population and sample. - Infer properties of populations or distributions from a sample. - Understand what simple random sampling and bias in sampling mean. 9.01 (Averages and summary statistics) - Calculate the mean, mode, median and range for ungrouped data. - Find the modal class, and calculate estimates of the range, mean and median for grouped data, and understand why they are estimates. - Compare data sets using 'like for like' summary values. - Understand the advantages and disadvantages of summary values.		- Calculate a fraction of a quantity. - Express one quantity as a fraction of another. - Calculate with fractions greater than 1. - Solve problems involving fractions in real-world contexts. 2.02a: Decimals and fractions - Convert between fractions, decimals and percentages. - Use division to convert a simple fraction to a decimal. - Recognise equivalence between decimals, fractions and percentages. 2.03a: Percentage conversions - Understand percentage as 'number of parts per hundred'. - Convert between percentages, decimals and fractions. - Interpret percentages in mathematical and real-world contexts. 2.03b: Percentage calculations - Calculate a percentage of a quantity. - Express one quantity as a percentage of another. - Use percentages with and without a calculator. - Solve contextual percentage problems. 2.03c: Percentage change - Increase or decrease a quantity by a percentage. - Use decimal and fractional multipliers. - Solve original value problems. - Calculate simple interest. - Express percentage change as a decimal or fractional multiplier. - Apply multipliers to compound change problems. 5.03a: Growth and decay - Calculate simple interest in financial contexts. - Solve problems involving compound interest and depreciation.	from equations, tables and graphs. - Formulate equations involving inverse proportion. - Interpret solutions in real-world contexts. 8.03b: Angles on a line Find missing angles on straight lines. - Use angle facts to solve problems involving vertically opposite angles. - Apply angle facts involving parallel lines. - Justify solutions using geometrical reasoning. 8.03d: Angles in polygons - Find missing angles in polygons. - Calculate interior angles of polygons. - Calculate exterior angles of polygons. - Solve problems involving regular polygons. - Apply angle facts in multi-step geometrical problems. 8.04b: Properties of quadrilaterals - Apply angle facts to rectilinear figures. - Use properties of quadrilaterals to solve geometrical problems - Justify geometrical results using known angle properties. - Solve problems involving interior and exterior angles in quadrilaterals and polygons.	mathematical and real-world contexts. - Solve contextual percentage problems. - Use multipliers over repeated intervals. - Solve and interpret growth and decay problems. - Apply proportional reasoning in real-world contexts. - Formulate equations involving direct and inverse proportion. - Apply angle facts in multi-step geometrical problems.
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					• Use multipliers over repeated intervals. • Express exponential growth or decay as a formula. • Solve and interpret growth and decay problems. 5.01a: Equivalent ratios Find and simplify ratios in the form a : b. • Express ratios in the form 1 : n. • Recognise equivalent ratios. • Use ratios in contextual problems. 5.01b: Division in a given ratio • Split a quantity into two parts using a ratio. • Express the division of a quantity as a ratio. • Calculate one quantity from another using ratio. • Split a quantity into three or more parts given a ratio. • Solve contextual ratio problems including currency conversion. 5.01c: Ratios and fractions • Interpret a ratio as a fraction of a whole. • Link ratios with fractions and proportional reasoning. • Represent relationships using ratios and fractions. 5.01d: Solve ratio and proportion problems • Solve ratio and proportion problems. • Solve currency conversion problems. • Understand the relationship between ratio and linear functions. • Apply proportional reasoning in real-world contexts.		
Prior Knowledge	N2 - Factors, multiples and primes N3 - Four operations N4 - Order of operations and inverses N5 - Powers and roots N6 - Standard form N7 - Fractions, decimals and percentages A1 - Algebraic notation	N5 - Powers and roots A1 - Algebraic notation A2 - Manipulating algebraic expressions A3 - Substitution into formulae A4 - Solving equations and inequalities A5 - Rearranging formulae	N1 - Place value and ordering N3 - Four operations N7 - Fractions, decimals and percentages A1 - Algebraic notation A2 - Manipulating algebraic expressions S1 - Collecting and representing data S2 - Averages and range	S1 – Distributions and averages S2 – Tables, charts and diagrams S3 – Bivariate data N3 – Four operations R3 – Fractions of quantities	N3 – Four operations N7 – Fractions, decimals and percentages N6 – Standard form R3 – Fractions of quantities R4 – Ratio notation R5 – Dividing in a ratio R6 – Multiplicative relationships	N3 – Four operations N7 – Fractions, decimals and percentages A3 – Expressions, equations and inequalities R6 – Multiplicative relationships R7 – Ratio, fractions and linear functions R9 – Direct and inverse proportion	

				S3 - Graphs and charts S4 - Probability and sampling		R7 – Ratio, fractions and linear functions R8 – Percentage change R9 – Direct and inverse proportion	G5 – Geometrical notation and properties G7 – Properties of shapes G10 – Angle facts G11 – Angles in polygons	
	Future links	5.01, 5.02 – ratio and proportion 5.03 – growth and decay, financial mathematics and compound interest 6.01 – algebraic manipulation, simplification, expanding and factoring expressions 6.02 – algebraic substitution and formulae 6.03 – quadratic equations and Higher Tier algebra 7.01, 7.04 – graphs and exponential functions 3.02 – scientific calculations and standard form 3.03, 10.03, 1.05 – surds, irrational numbers and exact calculations	1.05, 3.03, 10.03 – surds, irrational numbers and exact calculations 6.01 – algebraic manipulation, simplification, expanding and factoring expressions 6.02 – algebraic substitution and formulae 6.03 – quadratic equations and Higher Tier algebra 6.04 – simultaneous equations 7.01, 7.04 – graphs and exponential functions 8.01 – mathematical proof and reasoning 12.02 – kinematics and rates of change	7.03 – Simultaneous equations and graphical representations 7.04 – Graphs and exponential functions 8.01 – Mathematical proof and reasoning 9.05 – Histograms and cumulative frequency 9.06 – Probability distributions and Venn diagrams 12.01 – Interpretation of statistical diagrams and critical analysis 12.02 – Rates of change and modelling real-life data	12.03a – Summary statistics 12.03b – Misrepresenting data 12.03c – Bivariate data 11.01 – Probability calculations 6.04 – Graphs Year 1 Statistics	2.01b – Calculations with fractions 2.01c – Fractions of a quantity 2.02a – Decimals and fractions 2.03a – Percentage conversions 2.03b – Percentage calculations 2.03c – Percentage change 5.01c – Ratios and fractions 5.01d – Solve ratio and proportion problems 5.02a – Direct proportion 5.02b – Inverse proportion 5.02 – Direct and inverse proportion 5.03a – Growth and decay 6.02 – Algebraic substitution and formulae 6.02 – Formulae 6.04 – Graphs 6.05 – Functions 7.01 – Coordinates and graphs 7.04 – Exponential graphs 11.01 – Probability calculations Year 1 Statistics	5.03a – Growth and decay 6.04 – Graphs 6.05 – Functions 7.01 – Coordinates and graphs 7.04 – Graphical interpretation 8.04a – Congruence and similarity 8.04b – Geometrical reasoning 8.05 – Circle theorems 9.01 – Transformations 9.03 – Similarity and enlargement 9.04 – Geometric proof 10.01 – Compound units 10.05 – Trigonometry 11.01 – Probability calculations	
	Assessment	- Weekly Sparx Maths homework - End of unit assessment	- Weekly Sparx Maths homework - Grade indicator assessment on all content from HT1 + HT2	- Weekly Sparx Maths homework - End of unit assessment	- Weekly Sparx Maths homework - Grade indicator assessment on all content from HT3 + HT4	- Weekly Sparx Maths homework - End of unit assessment	- Weekly Sparx Maths homework - Grade indicator assessment on all content from the year	
Year 9 Higher	Unit	1: Number, Operations and Integers 2: Fractions, Decimals and Percentages 3: Indices and Surds 4: Approximation and Estimation	6: Algebra	6: Algebra 12: Statistics	12: Statistics	2: Fractions, Decimals and Percentages 5: Ratio, proportion and rates of change	5: Ratio, proportion and rates of change 8: Basic Geometry	
	Knowledge + Skills	1.01a: Four rules Use non-calculator methods to calculate the sum, difference, product and quotient of positive and negative whole numbers. 1.02b: Prime numbers - Express a whole number as a product of its prime factors. - Use power notation in expressing a whole number as a product of its prime factors. 1.02c: Highest Common Factor (HCF) and Lowest Common Multiple (LCM) - Find the HCF and LCM of two whole numbers by listing. - Find the HCF and LCM of two whole numbers from their prime factorisations. 1.03a: Priority of operations Know the conventional order for	6.01a: Algebraic terminology and proofs - Understand and use the concepts and vocabulary of expressions, equations, formulae, inequalities, terms and factors. - Recognise the difference between an equation and an identity, and show algebraic expressions are equivalent. - Use algebra to construct arguments. 6.01b: Collecting like terms in sums and differences of terms - Simplify algebraic expressions by collecting like terms. 6.01c: Simplifying products and quotients - Simplify algebraic products and quotients. - Simplify algebraic products and	6.02a: Formulate algebraic expressions - Use subscript notation for position-to-term and term-to-term rules. 6.06a: Generate terms of a sequence - Find a position-to-term rule for simple arithmetic sequences, algebraically or in words. - Generate a sequence from a formula for the nth term. - Find a formula for the nth term of an arithmetic sequence. 6.06b: Special sequences - Find a formula for the nth term of a quadratic sequence. - Find a formula for the nth term of a geometric sequence. - Recognise sequences of triangular, square and cube numbers, and simple arithmetic progressions. - Recognise Fibonacci and quadratic sequences, and simple geometric	12.02b: Grouped data - Interpret and construct diagrams for grouped data as appropriate, i.e. cumulative frequency graphs and histograms (with either equal or unequal class intervals). - Calculate estimates of mean, median, mode, range, quartiles and interquartile range from graphical representation of grouped data. 12.03a: Summary statistics - Draw and interpret box plots. - Use the median and interquartile range to compare distributions.	2.01a: Equivalent fractions - Recognise and use equivalence between simple fractions and mixed numbers. 2.01b: Calculations with fractions - Add, subtract, multiply and divide simple fractions (proper and improper), including mixed numbers and negative fractions. - Carry out more complex calculations including the use of improper fractions. 2.01c: Fractions of a quantity - Calculate a fraction of a quantity. - Express one quantity as a fraction of another. - Calculate with fractions greater than 1. 2.02a: Decimals and fractions - Convert between fractions, decimals and percentages.	5.02a: Direct proportion - Solve simple problems involving quantities in direct proportion including algebraic proportions. - Solve more formal problems involving quantities in direct proportion. - Recognise that if $y=kx$ then y is directly proportional to x - Formulate equations and solve problems involving a quantity in direct proportion to a power or root of another quantity. 5.02b: Inverse proportion - Solve simple word problems involving quantities in inverse proportion or simple algebraic proportions. - Solve more formal problems involving quantities in inverse proportion. - Formulate equations and solve problems involving a quantity in	- Simplify expressions with surds. - Expand brackets involving surds. - Rationalise the denominator. - Expand products of more than two binomials. - Factorise quadratic expressions of the form $ax^2 + bx + c$ - Rearrange formulae to change the subject where the subject appears twice. - Set up and solve linear equations in mathematical and non-mathematical contexts, including those with the unknown on both sides of the equation. - Find a formula for the nth term of a quadratic sequence. - Find a formula for the nth term of a geometric sequence.

		performing calculations involving brackets, four rules and powers, roots and reciprocals. 2.02b: Addition, subtraction and multiplication of decimals Add, subtract, multiply decimals including negative decimals, without a calculator. 2.02c: Division of decimals • Divide a decimal by a whole number, including negative decimals, without a calculator. • Without a calculator, divide a decimal by a decimal. 3.02b: Calculations with numbers in standard form • Use a calculator to perform calculations with numbers in standard form. • Add, subtract, multiply and divide numbers in standard form, without a calculator. 3.03b: Manipulating surds • Simplify expressions with surds. • Expand brackets involving surds. • Rationalise the denominator.	quotients using the laws of indices. 6.01d: Multiplying out brackets • Simplify algebraic expressions by multiplying a single term over a bracket. • Expand products of two binomials. • Expand products of more than two binomials. 6.01e: Factorising • Take out common factors. • Factorise quadratic expressions of the form $x^2 + bx + c$ • Factorise quadratic expressions of the form $ax^2 + bx + c$ 6.02b: Substitute numerical values into formulae and expressions • Substitute positive numbers into simple expressions and formulae to find the value of the subject. • Substitute positive or negative numbers into more complex formulae, including powers, roots and algebraic fractions. 6.02c: Change the subject of a formula • Rearrange formulae to change the subject, where the subject appears once only. • Rearrange formulae to change the subject where a power or reciprocal of the subject appears. • Rearrange formulae to change the subject where the subject appears twice. 6.02d: Recall and use standard formulae • Formulate simple formulae and expressions from real-world contexts. 6.02e: Use kinematics formulae • Use kinematics formulae 6.03a: Linear equations in one unknown • Solve linear equations in one unknown algebraically. • Set up and solve linear equations in mathematical and non-mathematical contexts, including those with the unknown on both sides of the equation. • Interpret solutions in context.	progressions. 12.03a: Summary statistics • Calculate the mean, mode, median and range for ungrouped data. • Find the modal class, and calculate estimates of the range, mean and median for grouped data, and understand why they are estimates. • Compare data sets using 'like for like' summary values. • Understand the advantages and disadvantages of summary values. 12.03b: Misrepresenting data • Interpret multiple and composite bar charts. • Interpret and construct line graphs for time series data, and identify trends (e.g. seasonal variations). • Understand what simple random sampling and bias in sampling mean. 12.03c: Bivariate data • Plot and interpret scatter diagrams for bivariate data. • Recognise and interpret correlation within the context of the variables, and appreciate the distinction between correlation and causation. • Draw a line of best fit by eye, and use it to make predictions. • Interpolate and extrapolate from data, and be aware of the limitations of these techniques. 12.03d: Outliers • Recognise outliers on a scatter graph. 12.02a: Categorical and numerical data • Design tables to classify data. • Interpret and construct charts appropriate to the data type; including frequency tables, bar charts, pie charts and pictograms for categorical data, vertical line charts for ungrouped discrete numerical data. 12.01a: Populations and samples • Define the population in a study, and understand the difference between population and sample. • Infer properties of populations or distributions from a sample.	• Use division to convert a simple fraction to a decimal. • Convert a recurring decimal to an exact fraction or vice versa. 2.03a: Percentage conversions • Understand percentage is 'number of parts per hundred'. 2.03b: Percentage calculations • Calculate a percentage of a quantity, and express one quantity as a percentage of another, with or without a calculator. 2.03c: Percentage change • Increase or decrease a quantity by a simple percentage, including simple decimal or multipliers. • Apply this to simple original value problems and simple interest. • Express percentage change as a decimal or fractional multiplier. Apply this to compound change problems. 5.03a: Growth and decay • Calculate simple interest including in financial contexts. • Solve problems step-by-step involving multipliers over a given interval, for example, compound interest, depreciation. • Express exponential growth or decay as a formula. • Solve and interpret answers in growth and decay problems. 5.01a: Equivalent ratios • Find the ratio of quantities in the form a:b and simplify. • Find the ratio of quantities in the form 1:n. 5.01b: Division in a given ratio • Split a quantity into two parts given the ratio of the parts. • Express the division of a quantity into two parts as a ratio. • Calculate one quantity from another, given the ratio of the two quantities. • Split a quantity into three or more parts given the ratio of the parts. 5.01c: Ratios and fractions • Interpret a ratio of two parts as a fraction of a whole. 5.01d: Solve ratio and proportion problems • Solve simple ratio and proportion problems. • Currency conversion problems. • Understand the relationship between ratio and linear functions.	inverse proportion to a power or root of another quantity. 8.03b: Angles on a line • Find missing angles on lines. 8.03d: Angles in polygons • Find missing angles in polygons. • Find interior and exterior angles. 8.04b: Properties of quadrilaterals • Apply the angle facts to angles in rectilinear figures and to justify the results.	• Interpret and construct diagrams for grouped data as appropriate, i.e. cumulative frequency graphs and histograms (with either equal or unequal class intervals). • Calculate estimates of mean, median, mode, range, quartiles and interquartile range from graphical representation of grouped data. • Draw and interpret box plots. • Use the median and interquartile range to compare distributions. Convert a recurring decimal to an exact fraction or vice versa. • Solve problems step-by-step involving multipliers over a given interval, for example, compound interest, depreciation. • Formulate equations and solve problems involving a quantity in direct and inverse proportion to a power or root of another quantity.
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	Prior links	N2 - Factors, multiples and primes N3 - Four operations N4 - Order of operations and inverses N5 - Powers and roots N6 - Standard form N7 - Fractions, decimals and percentages A1 - Algebraic notation	N2 - Factors, multiples and primes N3 - Four operations N4 - Order of operations and inverses N5 - Powers and roots N6 - Standard form N7 - Fractions, decimals and percentages A1 - Algebraic notation A2 - Substitution A3 - Expressions, equations and inequalities A4 - Simplifying and manipulating expressions A5 - Formulae A7 - Linear equations	A6 - Modelling with algebra A14 - Sequences S1 - Distributions and averages S2 - Tables, charts and diagrams S3 - Bivariate data	S1 - Distributions and averages S2 - Tables, charts and diagrams	N3 - Four operations N7 - Fractions, decimals and percentages N8 - Fractions and percentages as operators R3 - Fractions of quantities R4 - Ratio notation R5 - Dividing in a ratio R6 - Multiplicative relationships R7 - Ratio, fractions and linear functions R8 - Percentage change R9 - Direct and inverse proportion	R9 - Direct and inverse proportion G5 - Geometrical notation and properties G7 - Properties of shapes G10 - Angle facts G11 - Angles in polygons	
	Future links	5.01, 5.02 – ratio and proportion 5.03 – growth and decay, financial mathematics and compound interest 6.02 – algebraic substitution and formulae 6.01 – algebraic manipulation, simplification, expanding and factorising expressions 6.03 – quadratic equations and Higher Tier algebra 7.01, 7.04 – graphs and exponential functions 3.02 – scientific calculations and standard form 3.03, 10.03, 10.05 – surds, irrational numbers and exact calculations 10.01 – measurement and compound units 10.02, 10.03 – perimeter, area and volume 10.05 – Pythagoras and trigonometry 11.01 – probability calculations and relative frequency 12.02, 12.03 – statistical calculations, averages and interpreting real-world data 4.01, 10.03 – upper and lower bounds, estimation and limits of accuracy	2.01, 2.03, 4.01c – fractions, decimals, percentages, proportional reasoning, estimation, bounds and error intervals 5.01, 5.02, 5.03 – ratio, proportion, algebraic proportion, growth and decay, compound interest and financial mathematics 6.01f, 6.01g, 6.02a, 6.03b, 6.03c, 6.03d, 6.03e, 6.04, 6.05, 6.06 – Higher Tier algebra, algebraic modelling, equations, inequalities, sequences, functions and graphical relationships 7.01, 7.02, 7.03, 7.04 – coordinates, graphs, gradients, transformations and graphical interpretation 8.01, 8.02, 8.03, 8.04, 8.05 – geometrical reasoning, polygons, angle facts, loci, constructions and circle theorems 9.01, 9.02, 9.03, 9.04 – transformations, congruence, similarity, enlargement, vectors and geometric proof 10.01, 10.02, 10.03, 10.04, 10.05 – units, compound measures, perimeter, area, volume, surface area and trigonometry 11.01, 11.02 – probability calculations, sample spaces, tree diagrams and conditional probability 12.01, 12.02, 12.03 – statistical diagrams, averages, grouped data, scatter graphs and statistical interpretation	12.03a – 12.02b grouped data (cumulative frequency and box plots) 12.03b misrepresenting data	Year 1 Statistics	2.01, 2.03, 4.01 – fractions, percentages, proportional reasoning, financial mathematics, estimation and accuracy in calculations 5.01, 5.02, 5.03 – ratio, proportion, growth and decay, compound interest and financial mathematics 6.01, 6.03, 6.05 – Higher Tier algebra, equations, inequalities, functions and graphical relationships 7.01, 7.04 – graphs, gradients and graphical interpretation 8.01, 8.02, 8.03, 8.04, 8.05 – geometrical reasoning, angle facts, loci, constructions and circle theorems 9.01, 9.03, 9.04 – transformations, similarity, enlargement, vectors and geometric proof 10.01, 10.02, 10.03, 10.04, 10.05 – units, compound measures, perimeter, area, volume, surface area and trigonometry 11.01, 11.02 – probability calculations and probability diagrams	5.02a, 5.02b – graphs of equations and functions, graphs of real-world contexts, ratio and proportion problems, growth and decay 8.01a, 8.01c – perimeter, area, volume, surface area, polyhedra and plans and elevations 8.01b, 8.03a, 8.03b, 8.03c, 8.03d – geometrical reasoning, properties of triangles and quadrilaterals, circle theorems and angle problems 8.04a – congruent triangles, similar triangles, Pythagoras' theorem and trigonometry 8.04b – angles in polygons, cyclic quadrilaterals, symmetry and geometrical proof 8.04c – reflections, rotations, enlargements and combinations of transformations	
	Assessment	- Weekly Sparx Maths homework - End of unit assessment	- Weekly Sparx Maths homework - Grade indicator assessment on all content from HT1 + HT2	- Weekly Sparx Maths homework - End of unit assessment	- Weekly Sparx Maths homework - Grade indicator assessment on all content from HT3 + HT4	- Weekly Sparx Maths homework - End of unit assessment	- Weekly Sparx Maths homework - Grade indicator assessment on all content from the year	

Year 10 Foundat ion	Unit	8: Basic Geometry	10: Mensuration 7: Graphs of Equations and Functions	8: Basic Geometry 10: Mensuration	4: Approximation and Estimation 8: Basic Geometry 9: Congruence and Similarity 10: Mensuration	6: Algebra 7: Graphs of Equations and Functions	11: Probability	
	Knowledge + Skills	8.01b: Angles - Use and interpret angle notation and terminology. - Identify and classify angle types (acute, obtuse, reflex, right angle). 8.01c: Polygons - Know and use the names and properties of polygons. - Distinguish between regular and irregular polygons. 8.03a: Angles at a point - Apply the fact that angles at a point sum to 360°. - Use angle facts at a point in simple geometric problems. 8.03b: Angles on a line - Apply the fact that angles on a straight line sum to 180°. - Find missing angles formed on a straight line. 8.03c: Angles between intersecting and parallel lines - Identify and use alternate, co-interior and corresponding angles. - Apply parallel line angle facts to find missing angles in diagrams. 8.03d: Angles in polygons - Use the interior angle sum of a triangle (180°) and quadrilateral (360°). - Calculate interior and exterior angles of regular and irregular polygons. - Apply the exterior angle theorem to solve problems. 8.04a: Properties of a triangle - Know and apply properties of equilateral, isosceles, scalene and right-angled triangles. - Use triangle properties to find missing angles and justify results. 8.04b: Properties of quadrilaterals - Know and apply properties of squares, rectangles, parallelograms, rhombuses, trapezia and kites. - Use quadrilateral properties to calculate missing angles and side lengths. 8.04c: Symmetry - Identify lines of symmetry in 2D shapes. - Identify and state the order of rotational symmetry of a shape.	10.05a: Pythagoras’ theorem - Use Pythagoras’ theorem to find an unknown side in a right-angled triangle. - Apply Pythagoras’ theorem in 2D contexts including coordinates. 10.05a: Pythagoras’ theorem (continued) - Apply Pythagoras’ theorem in more complex 2D and 3D contexts. 10.05b: Trigonometry in right-angled triangles - Use sin, cos and tan ratios to find unknown sides in right-angled triangles. - Use inverse trig ratios to find unknown angles in right-angled triangles. - Set up and solve trigonometric equations in mathematical and real-world contexts. 10.05c: Exact trigonometric ratios - Know and use exact values of sin, cos and tan for 0°, 30°, 45°, 60° and 90°. 7.01a: x- and y-coordinates - Use coordinates to describe and plot points in all four quadrants. 7.01b: Graphs of equations and functions - Plot and interpret linear and quadratic graphs from a table of values. - Plot and interpret polynomial and reciprocal graphs. 7.02a: Straight line graphs - Calculate and interpret the gradient and y-intercept of a straight line. - Use $y = mx + c$ to describe and sketch straight-line graphs. 7.02b: Parallel and perpendicular lines - Identify parallel lines from their equations. 7.04a: Graphs of real-world contexts - Interpret and draw graphs representing real-world situations, including distance–time graphs.	8.01d: Polyhedra and other solids - Recognise and name common 3D solids including prisms, pyramids, cones and spheres. - Identify the number of faces, edges and vertices of 3D shapes. 8.01g: x- and y-coordinates - Use coordinate geometry to solve geometric problems in context. 8.06a: 3-dimensional solids - Recognise and describe properties of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres. - Solve problems involving faces, surfaces, edges and vertices. 8.06b: Plans and elevations - Interpret plans and elevations of 3D solids from different directions. - Construct accurate plans and elevations of 3D shapes. 10.01a: Units of measurement - Convert fluently between standard metric units of length, area, volume and mass. - Use units appropriately in algebraic and measurement contexts. 10.02a: Perimeter of rectilinear shapes - Calculate the perimeter of rectangles, triangles and composite rectilinear shapes. 10.02c: Perimeter of composite shapes - Find the perimeter of shapes formed from combinations of straight lines and circular arcs. 10.03a: Area of a triangle - Use $A = \frac{1}{2}bh$ to calculate the area of a triangle. 10.03b: Area of a parallelogram - Use $A = bh$ to calculate the area of a parallelogram. 10.03c: Area of a trapezium - Use $A = \frac{1}{2}(a + b)h$ to calculate the area of a trapezium. 10.03d: Area of a circle - Use $A = \pi r^2$ to calculate the area of a circle. - Calculate the area of sectors. 10.02b: Circumference of a circle - Use $C = \pi d$ and $C = 2\pi r$ to calculate	4.01c: Upper and lower bounds - Write error intervals using inequality notation for rounded or truncated values. - Apply limits of accuracy to measurements and interpret results. 8.01f: Geometrical instruments - Use rulers, protractors and compasses accurately to draw and measure. 8.02a: Perpendicular bisector - Construct the perpendicular bisector of a line segment using ruler and compasses. 8.02b: Angle bisector - Construct the bisector of an angle using ruler and compasses. 8.02c: Perpendicular from a point to a line - Construct a perpendicular from a given external point to a line. - Construct a perpendicular at a given point on a line. 8.02d: Loci - Construct and describe loci including the set of points equidistant from a point or from two lines. - Solve problems involving intersections of loci and shade regions. 9.03a: Vector arithmetic - Add and subtract vectors and multiply a vector by a scalar. 9.03b: Column vectors - Represent translations and movements using column vector notation. 9.01c: Translation - Translate shapes using a column vector description. 9.01a: Reflection - Reflect shapes in vertical, horizontal and diagonal mirror lines. - Identify the mirror line of a reflection and describe it fully. 9.01b: Rotation - Rotate shapes about a given centre through a given angle in a given direction. - Describe a rotation fully (centre, angle, direction).	6.02c: Change the subject of a formula - Rearrange formulae to change the subject where the subject appears once only. 6.03b: Quadratic equations - Solve quadratic equations of the form $x^2 + bx + c = 0$ by factorising. 6.03c: Simultaneous equations - Solve a pair of linear simultaneous equations algebraically by elimination or substitution. - Interpret the solution of simultaneous equations in context. 7.01c: Polynomial and reciprocal functions - Recognise and sketch the graphs of quadratic, cubic and reciprocal functions. 6.03d: Approximate solutions using a graph - Use graphs of linear and quadratic equations to find approximate solutions. - Interpret the intersection of graphs to solve simultaneous and other equations graphically. 6.04a: Inequalities in one variable - Understand and use inequality notation ($<$, $>$, $\leq$, $\geq$). - Solve linear inequalities in one variable and represent solutions on a number line.	11.01a: The probability scale - Use the 0 to 1 probability scale and associated language (impossible, unlikely, evens, likely, certain). 11.01b: Relative frequency - Use relative frequency to estimate the probability of an event from experimental data. 11.01c: Relative frequency and probability - Compare experimental and theoretical probabilities. - Understand that increasing the number of trials produces more reliable estimates. 11.01d: Equally likely outcomes and probability - Calculate the probability of single events with equally likely outcomes. - Use combined events and list outcomes systematically. - Calculate expected outcomes for a given number of trials. 11.02a: Sample spaces - Generate sample spaces for one or two events. - Use sample spaces to calculate probabilities of combined events. 11.02b: Enumeration - List outcomes systematically for combined events. - Use the product rule for counting. 11.02c: Venn diagrams and sets - Represent events and probabilities using Venn diagrams. - Interpret basic set notation (union, intersection, complement) in a probability context. 11.02d: Tree diagrams - Construct and use tree diagrams to find probabilities of two or more events. 11.02e: The addition law of probability - Apply $P(A \text{ or } B) = P(A) + P(B)$ for mutually exclusive events. 11.02f: The multiplication law of probability and conditional probability - Use $P(A \text{ and } B) = P(A) \times P(B)$ for independent events. - Calculate conditional probability	- Apply parallel line angle facts to find missing angles in diagrams. - Apply the exterior angle theorem to solve problems. - Set up and solve trigonometric equations in mathematical and real-world contexts. - Identify parallel lines from their equations. - Use coordinate geometry to solve geometric problems in context. - Find the area of shapes formed from combinations of rectangles, triangles, circles and other polygons. - Calculate arc lengths and areas of sectors. - Calculate the volume and surface area of cylinders, cones and spheres using given formulae. - Solve problems involving intersections of loci and shade regions. - Perform and describe combinations of two or more transformations. - Form and solve simultaneous equations - Calculate conditional probability from tree diagrams and two-way tables.

				the circumference of a circle. - Calculate arc lengths of sectors. 10.03e: Area of composite shapes - Find the area of shapes formed from combinations of rectangles, triangles, circles and other polygons. - Subtract areas to find the area of composite shapes including those with holes. 10.04a: Polyhedra - Calculate the volume of prisms including cuboids and cylinders using $V = Ah$. - Calculate the surface area of prisms including cuboids and cylinders. 10.04b: Cones and spheres - Calculate the volume and surface area of cones and spheres using given formulae. 10.04c: Pyramids - Calculate the volume and surface area of pyramids.	9.01d: Combinations of transformations - Perform and describe combinations of two or more transformations. 9.04b: Enlargement - Enlarge a shape by a positive whole-number scale factor from a given centre of enlargement. - Enlarge a shape by a positive fractional scale factor. 10.01b: Compound units - Use and interpret compound units such as speed, density and pressure. - Solve problems involving speed, distance and time, and density, mass and volume. 10.01c: Maps and scale drawings - Use maps and scale drawings to find real distances and bearings. - Construct accurate scale drawings from given information.		from tree diagrams and two-way tables.	
	Prior Knowledge	G5 - Geometrical notation and properties G7 - Properties of shapes G10 - Angle facts G11 - Angles in polygons	A8 - Coordinates A9 - Linear and quadratic graphs A10 - Graph interpretation A11 - Straight line graphs A13 - Graphs in context G13 - Pythagoras and trigonometry	A8 - Coordinates G1 - Perimeter, area and volume formulae G2 - Circles and composite shapes G14 - 3D shapes N9 - Units, rounding and estimation R1 - Unit conversion	G3 - Drawing and measuring G4 - Constructions G8 - Transformations G9 - Congruence, similarity and enlargement N9 - Units, rounding and estimation R2 - Scale factors and maps R10 - Compound units	A3 - Expressions, equations and inequalities A4 - Simplifying and manipulating expressions A5 - Formulae A9 - Linear and quadratic graphs A11 - Straight line graphs A12 - Using graphs to estimate A13 - Graphs in context	P1 - Probability experiments and scale P2 - Sum of probabilities P3 - Sets and Venn diagrams P4 - Sample spaces	
	Future links	8.02 – constructions and loci 8.05 – circle theorems and angle proofs 9.01 – transformations (reflections, rotations, translations) 9.02 – congruent triangles 9.04 – similar shapes and enlargement 10.02, 10.03 – perimeter, area and composite shapes	7.01c – polynomial and reciprocal functions 7.04b, 7.04c – gradients and areas under graphs 10.05a, 10.05b – Pythagoras' theorem and trigonometry in 3D contexts 6.03c, 6.03d – simultaneous equations graphically 6.04 – graphical solution of inequalities	10.01b – compound units (speed, density, pressure) 10.01c – maps and scale drawings 9.04c – similarity and area/volume scale factors 11.01, 11.02 – probability calculations	9.02 – congruent triangles and proofs 9.04a, 9.04c – similar triangles and similarity in 2D/3D 11.01 – probability scale and experimental probability	6.03e – iterative methods (Higher) 6.05 – functions and inverse/composite functions (Higher) 7.01d, 7.01e – exponential and trigonometric graphs (Higher) 11.02e, 11.02f – probability laws and conditional probability		
	Assessment	- Weekly Sparx Maths homework - End of unit assessment	- Weekly Sparx Maths homework - Grade indicator assessment on all content from HT1 + HT2	- Weekly Sparx Maths homework - End of unit assessment	- Weekly Sparx Maths homework - Grade indicator assessment on all content from HT3 + HT4	- Weekly Sparx Maths homework - End of unit assessment	- Weekly Sparx Maths homework - Grade indicator assessment on all content from the year	
Year 10 Higher SBO	Unit	8: Angles 10: Right Angled Triangles	7: Graphs and Coordinate Geometry	7: Graphs and Coordinate Geometry 10: Mensuration - Perimeter, Area and Volume 9: Transformations	9: Congruence and Similarity 8: Basic Geometry	6: Algebra	11: Probability	
	Knowledge + Skills	8.03a: Angles at a point Find missing angles at a point. 8.03b: Angles on a line	7.01a: Linear graphs Complete a table of values for linear graphs 7.01b: Quadratic graphs	7.04c: Gradient of a curve Find the gradient of a quadratic graph.	8.01a: 2D and 3D shapes Construct plans and elevations of 3D solids.	6.01e: Factorising quadratics Factorise quadratic expressions of the form $ax^2 + bx + c$	11.01a: Probability scale - Use the probability scale from 0 to 1. - Interpret probability values.	Apply Pythagoras' theorem in 2D and 3D contexts.

	- Find missing angles on a straight line. 8.03c: Angles between intersecting and parallel lines - Find missing angles formed by intersecting lines. - Find missing angles in parallel line diagrams. - Apply angle facts involving parallel lines. 8.03d: Angles in polygons - Find missing angles in polygons. - Find interior and exterior angles. - Apply angle facts to rectilinear figures and justify results. 10.05a: Pythagoras' theorem - Find missing lengths in right-angled triangles. - Apply Pythagoras' theorem in 2D and 3D contexts. 10.05b: Trigonometry in right-angled triangles - Find missing lengths in right-angled triangles using trigonometry. - Find missing angles in right-angled triangles. - Apply trigonometry to multi-step problems. 10.05c: Exact trigonometric ratios - Use exact trigonometric values. - Apply exact values in calculations.	- Draw quadratic graphs. - Use quadratic graphs to solve equations. 7.01c: Cubic graphs - Draw cubic graphs. - Interpret cubic graphs. 7.01d: Reciprocal graphs - Draw reciprocal graphs. - Interpret reciprocal graphs. 7.01e: Exponential graphs - Draw exponential graphs. - Interpret exponential growth and decay. 7.02a: Equation of a line - Find the equation of a straight line. - Find the equation of a line from a graph. 7.02b: Parallel and perpendicular lines - Find the equation of lines parallel to a given line. - Find the equation of lines perpendicular to a given line. - Find the equation of a tangent to a circle 7.04a: Gradient of a straight line - Interpret gradients in context. 7.04b: Rates of change - Interpret graphical rates of change.	- Find the gradient of a non-linear graph. 7.04d: Area under a graph - Estimate the area under a quadratic graph. - Estimate the area under a non-linear graph. 10.03a: Area of triangles and quadrilaterals - Find the area and perimeter of triangles. - Find the area and perimeter of parallelograms. - Find the area and perimeter of trapezia. 10.03b: Compound shapes - Find the area and perimeter of compound shapes. 10.03c: Circles - Find the area and circumference of circles. 10.03d: Sectors and arcs - Find the area of sectors. - Find the perimeter of sectors. 10.04a: Prisms - Find the volume of prisms. - Find the surface area of prisms. 10.04b: Cylinders - Find the volume and surface area of cylinders. 10.04c: Cones, pyramids and spheres - Find the volume and surface area of cones. - Find the volume and surface area of pyramids. - Find the volume and surface area of spheres. 10.04d: Composite solids - Find the volume of composite solids. - Find the surface area of composite solids. 9.01a: Reflection - Reflect shapes in given mirror lines. 9.01b: Rotation - Rotate shapes about a given centre. 9.01c: Translation - Translate shapes using vectors.	- Draw solids from plans and elevations. 8.02a: Constructions and bearings - Draw bearings accurately. - Find bearings between points. - Solve problems involving bearings. 8.02b: Geometrical constructions - Construct the perpendicular bisector of a line segment. - Construct the midpoint of a line segment. - Construct angle bisectors. - Construct perpendicular lines using a compass and ruler. 8.02c: Loci - Identify and use loci. - Apply constructions and loci to solve problems.	6.03c: Quadratic equations - Solve quadratic equations by factorising. - Solve quadratic equations requiring rearrangement. - Solve quadratic equations using the quadratic formula. - Solve quadratic equations by completing the square. - Set up and solve quadratic equations in context. 7.01b: Quadratic graphs - Sketch quadratic graphs. - Find turning points by completing the square. - Use graphs to solve equations. 6.03d: Simultaneous equations - Solve linear simultaneous equations by substitution. - Solve linear simultaneous equations by elimination. - Solve simultaneous equations involving a linear and non-linear equation. - Form and solve simultaneous equations from context. 6.03e: Inequalities - Write down values satisfying inequalities. - Solve linear inequalities. - Represent solutions on number lines. - Represent inequalities graphically. - Solve quadratic inequalities. - Use set notation to describe solution sets.	11.01b: Experimental and theoretical probability - Calculate experimental probability. - Calculate theoretical probability. - Compare experimental and theoretical probabilities. 11.01c: Relative frequency - Use relative frequency as an estimate of probability. 11.02a: Sample space diagrams - Use tables and grids to list outcomes. - Calculate probabilities from sample spaces. 11.02b: Combined events - Calculate probabilities of combined events. 11.02c: Venn diagrams - Use Venn diagrams to classify outcomes. - Calculate probabilities using Venn diagrams. - Use set notation. 11.02d: Tree diagrams - Construct tree diagrams. - Calculate probabilities using tree diagrams. - Solve independent and dependent event problems. 11.02e: Probability laws - Apply the addition law of probability. - Use $P(A)+P(\text{not } A)=1$ $P(A \cup B)=P(A)+P(B)-P(A \cap B)$ 11.02f: Conditional probability - Understand conditional probability. - Calculate conditional probability from first principles. - Apply $P(A \cap B)=P(A B) \times P(B)$ - Recognise and use independence.	- Apply trigonometry to multi-step problems. - Find the equation of lines perpendicular to a given line. - Find the equation of a tangent to a circle - Find the volume and surface area of cylinders. - Find the volume and surface area of cones. - Find the volume and surface area of spheres. - Apply constructions and loci to solve problems. - Find turning points by completing the square. - Solve simultaneous equations involving a linear and non-linear equation. - Solve quadratic inequalities. - Understand conditional probability.
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			9.01d: Enlargement - Enlarge shapes using positive, negative and fractional scale factors. 9.02a: Combined transformations - Describe transformations. - Perform and describe combinations of transformations.				
Prior Knowledge	Angles KS3 Prior Links - G1 – 2D and 3D Shapes - G3 – Angle Facts - G4 – Polygons GCSE Prior Links 1.01a – Four rules 6.02b – Substitute numerical values into formulae and expressions 6.03a – Linear equations in one unknown Right-Angled Triangles KS3 Prior Links - G1 – 2D and 3D Shapes - G3 – Angle Facts - N3 – Four Operations GCSE Prior Links 1.01a – Four rules 2.01b – Calculations with fractions 6.02b – Substitute numerical values into formulae and expressions 8.01b – Angles	Graphs and Coordinate Geometry KS3 Prior Links - A3 – Solving Equations - A5 – Graphs GCSE Prior Links 1.01a – Four rules 2.02a – Decimals and fractions 6.02a – Formulate algebraic expressions 6.02b – Substitute numerical values into formulae and expressions 6.03a – Linear equations in one unknown 6.06a – Generate terms of a sequence	Graphs (Rates of Change) KS3 Prior Links - A5 – Graphs - A3 – Solving Equations GCSE Prior Links 1.01a – Four rules 6.02a – Formulate algebraic expressions 6.03a – Linear equations in one unknown 6.06a – Generate terms of a sequence Perimeter, Area and Volume KS3 Prior Links - G1 – 2D and 3D Shapes - G2 – Perimeter, Area and Volume GCSE Prior Links 1.01a – Four rules 2.01b – Calculations with fractions 4.01a – Rounding 5.01a – Equivalent ratios 5.01c – Ratios and fractions 6.02b – Substitute numerical values into formulae and expressions 8.01a – 2D and 3D shapes Transformations KS3 Prior Links - G5 – Transformations - G6 – Coordinates GCSE Prior Links 8.04c – Symmetry 8.01a – 2D and 3D shapes	Plans and Elevations KS3 Prior Links - G1 – 2D and 3D Shapes GCSE Prior Links 8.01a – 2D and 3D shapes 8.04b – Properties of quadrilaterals Bearings KS3 Prior Links - G3 – Angle Facts GCSE Prior Links 8.01b – Angles 8.03a – Angles at a point 8.03b – Angles on a line 8.03c – Angles between intersecting and parallel lines Constructions and Loci KS3 Prior Links - G5 – Transformations - G3 – Angle Facts GCSE Prior Links 8.01a – 2D and 3D shapes 8.01b – Angles 8.04c – Symmetry	Quadratic Equations KS3 Prior Links - A1 – Algebraic Expressions - A3 – Solving Equations GCSE Prior Links 1.04a – Inverse operations 6.01a – Algebraic terminology and proofs 6.01b – Collecting like terms 6.01c – Simplifying products and quotients 6.01d – Multiplying out brackets 6.01e – Factorising 6.03a – Linear equations in one unknown Simultaneous Equations KS3 Prior Links - A1 – Algebraic Expressions - A3 – Solving Equations GCSE Prior Links 6.01a – Algebraic terminology and proofs 6.01b – Collecting like terms 6.01c – Simplifying products and quotients 6.01d – Multiplying out brackets 6.01e – Factorising 6.02c – Change the subject of a formula 6.03a – Linear equations in one unknown Inequalities KS3 Prior Links - A3 – Solving Equations - N1 – Integers GCSE Prior Links 1.04a – Inverse operations 6.03a – Linear equations in one unknown	Probability KS3 Prior Links - S4 – Probability - S1 – Tables and Charts - N6 – Fractions, Decimals and Percentages GCSE Prior Links 2.01a – Equivalent fractions 2.02a – Decimals and fractions 2.03a – Percentage conversions 12.01a – Populations and samples 12.02a – Categorical and numerical data	
Future links	Angles Year 11 Future Links 8.05b–h Circle theorems 9.02a–b Congruent triangles	Graphs and Coordinate Geometry Year 11 Future Links 6.03e Approximate solutions by iteration 6.05a Functions	Graphs (Rates of Change) Year 11 Future Links 6.03e Approximate solutions by iteration 6.05a Functions	Bearings Year 11 Future Links 10.05d Sine rule 10.05e Cosine rule 9.04a Similar triangles Edexcel A Level Future Links	Quadratic Equations Year 11 Future Links 6.01g Algebraic fractions 6.03e Approximate solutions by iteration 6.05a Functions	Probability Edexcel A Level Future Links - Statistical sampling - Data presentation and interpretation - Probability	

		• 9.04a–c Similar triangles and similar shapes • 10.05d–e Sine rule and cosine rule Edexcel A Level Future Links • Trigonometric identities • Trigonometric graphs • Radians • Coordinate geometry • Parametric equations • Proof • Further trigonometry <u>Right-Angled Triangles</u> Year 11 Future Links • 10.05d Sine rule • 10.05e Cosine rule • 8.05b–h Circle theorems • 9.04a–c Similar triangles and shapes • 9.02a–b Congruence Edexcel A Level Future Links • Trigonometric functions • Trigonometric identities • Radians • Parametric equations • Calculus with trigonometric functions • Mechanics (forces and projectiles)	• 7.01e Trigonometric functions • 7.03a Transformations of functions Edexcel A Level Future Links • Functions • Composite and inverse functions • Graph transformations • Coordinate geometry • Differentiation • Integration • Numerical methods • Parametric equations	• 7.01e Trigonometric functions • 7.03a Transformations of functions Edexcel A Level Future Links • Differentiation • Integration • Numerical methods • Parametric equations • Modelling with functions <u>Perimeter, Area and Volume</u> Year 11 Future Links • 9.04a Similar triangles • 9.04c Similar shapes • 10.05d Sine rule • 10.05e Cosine rule Edexcel A Level Future Links • Trigonometry • Radians • Integration (area under curves) • Mechanics • Modelling <u>Transformations</u> Year 11 Future Links • 7.03a Transformations of functions • 9.03a–b Vectors Edexcel A Level Future Links • Graph transformations • Functions • Parametric equations • Vectors (Further Maths)	• Trigonometry • Radians • Mechanics • Vectors <u>Constructions and Loci</u> Year 11 Future Links • 9.02a Congruent triangles • 9.02b Applying congruent triangles • 9.04a Similar triangles Edexcel A Level Future Links • Proof • Coordinate geometry • Vectors • Geometrical reasoning	• 7.03a Transformations of functions Edexcel A Level Future Links • Functions • Graph transformations • Differentiation • Integration • Numerical methods • Sequences and series <u>Simultaneous Equations</u> Year 11 Future Links • 6.01g Algebraic fractions • 6.05a Functions • 6.03e Approximate solutions by iteration Edexcel A Level Future Links • Functions • Algebra and functions • Coordinate geometry • Numerical methods <u>Inequalities</u> Year 11 Future Links • 6.01g Algebraic fractions • 6.05a Functions • 6.03e Approximate solutions by iteration Edexcel A Level Future Links • Functions • Graph transformations • Numerical methods • Proof	• Binomial distribution • Hypothesis testing • Correlation and regression • Conditional probability • Normal distribution	
	Assessment	• Weekly Sparx Maths homework • End of unit assessment	• Weekly Sparx Maths homework • Grade indicator assessment on all content from HT1 + HT2	• Weekly Sparx Maths homework • End of unit assessment	• Weekly Sparx Maths homework • Grade indicator assessment on all content from HT3 + HT4	• Weekly Sparx Maths homework • End of unit assessment	• Weekly Sparx Maths homework • Grade indicator assessment on all content from the year	
	Year 11 Foundation	Unit 1: Number, Operations and Integers 2: Fractions, Decimals and Percentages 5: Ratio, Proportion and Rates of Change 6: Algebra 7: Graphs of Equations and Functions 9: Congruence and Similarity 10: Mensuration 11: Probability 12: Statistics	5: Ratio, Proportion and Rates of Change 6: Algebra 10: Mensuration	9: Congruence and Similarity	Revision	Revision	Revision	
	Knowledge + Skills	1.02b: Prime numbers • Identify prime numbers less than 20. • Express a whole number as a product of its prime factors using index notation. 1.02c: Highest Common Factor (HCF) and Lowest Common	5.02a: Direct proportion • Solve problems involving quantities in direct proportion. • Recognise and use the equation $y = kx$ for direct proportion. 5.02b: Inverse proportion • Solve problems involving quantities in inverse proportion.	9.02a: Congruent triangles • Identify congruent triangles using SSS, SAS, ASA and RHS conditions. • Formally prove that two triangles are congruent. 9.02b: Applying congruent triangles • Use congruence to prove geometric	• Based on QLA's from Grade Indicators, class teachers will create a bespoke SOW for their classes	• Based on QLA's from Grade Indicators, class teachers will create a bespoke SOW for their classes	• Based on QLA's from Grade Indicators, class teachers will create a bespoke SOW for their classes	• Solve reverse percentage (original value) and simple interest problems. • Apply multipliers to compound interest and depreciation problems • Set up and solve linear equations from real-world contexts.

	Multiple (LCM) - Find the HCF and LCM of two whole numbers by listing. - Find the HCF and LCM of two whole numbers from their prime factorisations. 2.01b: Calculations with fractions - Add, subtract, multiply and divide simple fractions (proper and improper), including mixed numbers. - Carry out more complex fraction calculations. 2.01c: Fractions of a quantity - Calculate a fraction of a quantity. - Express one quantity as a fraction of another, including fractions greater than 1. 2.03a: Percentage conversions - Convert fluently between fractions, decimals and percentages. 2.03b: Percentage calculations - Calculate a percentage of a quantity, with or without a calculator. - Express one quantity as a percentage of another. 2.03c: Percentage change - Increase or decrease a quantity by a given percentage using a multiplier. - Solve reverse percentage (original value) and simple interest problems. - Apply multipliers to compound interest and depreciation problems. 5.01a: Equivalent ratios - Write and simplify ratios, including with units. - Express a ratio in the form 1:n. 5.01b: Division in a given ratio - Split a quantity into two parts given the ratio of the parts. - Express the division of a quantity as a ratio. - Calculate one quantity from another given their ratio. 5.01c: Ratios and fractions - Interpret a ratio of two parts as a fraction of a whole. 5.01d: Solve ratio and proportion problems - Solve simple ratio and proportion problems, including unitary method. - Solve currency conversion and best-value problems. - Understand the connection between ratio and linear functions	- Recognise and use the equation $y = k/x$ for inverse proportion. 6.02e: Use kinematics formulae - Use the formulae $v = u + at$, $s = ut + \frac{1}{2}at^2$ and $v^2 = u^2 + 2as$ in context. 10.01a: Units of measurement - Convert fluently between standard metric units of length, area, volume and mass. - Use units in algebraic and measurement contexts. 10.01b: Compound units - Use compound units such as speed, density and pressure. - Solve problems using speed = distance $\div$ time and density = mass $\div$ volume.	results and properties of shapes. 9.03a: Vector arithmetic - Add and subtract vectors and multiply a vector by a scalar. 9.03b: Column vectors - Represent vectors in column vector notation. - Use column vectors to solve geometric problems. 9.04a: Similar triangles - Identify similar triangles and state the conditions for similarity. - Prove that two triangles are similar. 9.04c: Similar shapes - Calculate unknown lengths in similar shapes.				- Solve problems involving quantities in direct and inverse proportion. - Calculate unknown lengths in similar shapes.
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	5.03a: Growth and decay • Calculate simple interest, including in financial contexts. • Solve compound interest and depreciation problems step-by-step using multipliers. 6.01b: Collecting like terms in sums and differences of terms • Simplify algebraic expressions by collecting like terms. 6.01c: Simplifying products and quotients • Simplify algebraic products and quotients. • Apply index laws to simplify algebraic expressions. 6.01d: Multiplying out brackets • Expand single brackets. • Expand products of two binomials (double brackets). 6.01e: Factorising • Take out common factors from an expression. • Factorise simple quadratic expressions of the form $x^2 + bx + c$. 6.02b: Substitute numerical values into formulae and expressions • Substitute positive and negative numbers, powers and fractions into expressions and formulae. 6.03a: Linear equations in one unknown • Solve linear equations in one unknown algebraically. • Solve linear equations with the unknown on both sides. • Set up and solve linear equations from real-world contexts. 7.01b: Graphs of equations and functions • Plot and interpret linear and quadratic graphs from a table of values. • Plot and interpret polynomial and reciprocal graphs. 7.01c: Polynomial and reciprocal functions • Recognise and sketch graphs of quadratic and reciprocal functions. 7.02a: Straight line graphs • Calculate and interpret the gradient and y-intercept of a straight line. • Use $y = mx + c$ to describe and sketch straight-line graphs.						
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	9.01d: Combinations of transformations • Perform and describe combinations of two or more transformations on a shape.						
	10.02a: Perimeter of rectilinear shapes • Calculate the perimeter of rectangles, triangles and composite rectilinear shapes.						
	10.02b: Circumference of a circle • Use $C = \pi d$ and $C = 2\pi r$ to calculate circumference. • Calculate arc lengths of sectors.						
	10.02c: Perimeter of composite shapes • Find the perimeter of shapes formed from combinations of straight lines and arcs.						
	10.03a: Area of a triangle • Use $A = \frac{1}{2}bh$ to calculate the area of a triangle.						
	10.03b: Area of a parallelogram • Use $A = bh$ to calculate the area of a parallelogram.						
	10.03c: Area of a trapezium • Use $A = \frac{1}{2}(a + b)h$ to calculate the area of a trapezium.						
	10.03d: Area of a circle • Use $A = \pi r^2$ to calculate the area of a circle. • Calculate the area of sectors.						
	10.03e: Area of composite shapes • Find the area of composite shapes and subtract areas to find shaded regions.						
	10.05a: Pythagoras' theorem • Use Pythagoras' theorem to find unknown sides in right-angled triangles. • Apply in 2D and 3D contexts.						
	10.05b: Trigonometry in right-angled triangles • Use sin, cos and tan to find unknown sides and angles in right-angled triangles. • Apply in multi-step and 3D contexts.						
	11.01d: Equally likely outcomes and probability • Calculate the probability of single events with equally likely outcomes. • List combined events systematically and use to find						

		probabilities. 11.02d: Tree diagrams • Construct and use tree diagrams to find probabilities of combined events. 11.02e: The addition law of probability • Apply $P(A \text{ or } B) = P(A) + P(B)$ for mutually exclusive events. 12.03c: Bivariate data • Plot and interpret scatter diagrams. • Recognise and describe correlation; distinguish between correlation and causation. • Draw a line of best fit by eye and use it to make predictions. 12.03d: Outliers • Identify outliers on scatter graphs and frequency diagrams. • Comment on the effect of outliers on summary statistics.						
	Prior Knowledge	N2 - Factors, multiples and primes N3 - Four operations N7 - Fractions, decimals and percentages N8 - Fractions and percentages as operators R3 - Fractions of quantities R4 - Ratio notation R5 - Dividing in a ratio R6 - Multiplicative relationships R7 - Ratio, fractions and linear functions R8 - Percentage change A2 - Substitution A4 - Simplifying and manipulating expressions A7 - Linear equations A9 - Linear and quadratic graphs A11 - Straight line graphs A13 - Graphs in context G1 - Perimeter, area and volume formulae G2 - Circles and composite shapes G8 - Transformations G13 - Pythagoras and trigonometry P1 - Probability experiments and scale P2 - Sum of probabilities P4 - Sample spaces S1 - Distributions and averages S3 - Bivariate data	R8 - Percentage change R9 - Direct and inverse proportion R10 - Compound units N9 - Units, rounding and estimation R1 - Unit conversion	G6 - Triangles and congruence G8 - Transformations G9 - Congruence, similarity and enlargement G12 - Proof and geometrical reasoning				
	Future links	Post-16: proportion, algebraic reasoning, and financial mathematics Post-16: coordinate geometry, graphs and algebraic functions Post-16: probability and statistical analysis in vocational and academic contexts	Post-16: rates of change, kinematics and mechanics Post-16: compound measures in science and engineering contexts 9.04c – similar shapes and area/volume scale factors	Post-16: geometric proof and vector geometry Post-16: similarity and trigonometry in science and design contexts				

		9.02 – congruent triangles and proof 9.04 – similar shapes and scale factors						
	Assessment	- Weekly Sparx Maths homework - End of unit assessment	- Weekly Sparx Maths homework - Grade indicator assessment on all GCSE content covered up to now	- Weekly Sparx Maths homework - End of unit assessment	- Weekly Sparx Maths homework - Grade indicator assessment on all GCSE content covered up to now	GCSE exams	GCSE exams	
Year 11 Higher NEU	Unit	1: Number, Operations and Integers 2: Fractions, Decimals and Percentages 3: Indices and Surds 5: Ratio, Proportion and Rates of Change 6: Algebra 7: Graphs of Equations and Functions 8: Basic Geometry 9: Congruence and Similarity 10: Mensuration 11: Probability 12: Statistics	9: Congruence and Similarity 10: Mensuration	8: Circles 9: Plane vector geometry	6: Algebra 7: Graphs of Equations and Functions			
	Knowledge + Skills	1.02c: Highest Common Factor (HCF) and Lowest Common Multiple (LCM) - Find the HCF and LCM of two whole numbers by listing. - Find the HCF and LCM of two whole numbers from their prime factorisations. 2.02a: Decimals and fractions - Convert between fractions, decimals and percentages. - Use division to convert a simple fraction to a decimal. - Convert a recurring decimal to an exact fraction. 2.03a: Percentage conversions - Convert fluently between fractions, decimals and percentages. 2.03b: Percentage calculations - Calculate a percentage of a quantity. - Express one quantity as a percentage of another, with or without a calculator. 2.03c: Percentage change - Increase or decrease a quantity by a given percentage using a multiplier. - Solve reverse percentage (original value) problems. - Apply percentage multipliers to compound change problems. 3.03a: Exact calculations - Use fractions, multiples of π and surds to give exact answers.	11.02c: Venn diagrams and sets - Represent probabilities using Venn diagrams and interpret set notation. - Use Venn diagrams to calculate conditional probabilities. 9.02a: Congruent triangles - Identify congruent triangles using the conditions SSS, SAS, ASA and RHS. - Formally prove that two triangles are congruent. 9.02b: Applying congruent triangles - Use congruence to prove geometric results and properties of shapes. 9.04a: Similar triangles - Identify similar triangles using AA, SSS and SAS similarity conditions. - Formally prove that two triangles are similar. 9.04c: Similar shapes - Calculate unknown lengths in similar shapes. - Use the relationship between linear, area and volume scale factors in similar shapes. 10.05d: Sine rule - Use the sine rule to find unknown sides and angles in non-right-angled triangles. - Apply the sine rule in context, 10.05e: Cosine rule - Use the cosine rule to find unknown sides and angles in non-	8.05b: Angles subtended at centre and circumference - Apply and prove the theorem: angle at centre = twice angle at circumference. 8.05c: Angle in a semicircle - Apply and prove the theorem: angle in a semicircle is 90°. 8.05d: Angles in the same segment - Apply and prove the theorem: angles in the same segment are equal. 8.05e: Angle between radius and chord - Apply and prove the perpendicular bisector of a chord passes through the centre. 8.05f: Angle between radius and tangent - Apply and prove the theorem: radius meets tangent at 90°. - Use the two-tangent theorem. 8.05g: The alternate segment theorem - Apply and prove the alternate segment theorem. 8.05h: Cyclic quadrilaterals - Apply and prove the theorem: opposite angles in a cyclic quadrilateral sum to 180°. 9.03a: Vector arithmetic - Add and subtract vectors and multiply by a scalar. - Use vectors to construct geometric proofs.	6.01g: Algebraic fractions - Simplify algebraic fractions by cancelling common factors. - Add, subtract, multiply and divide algebraic fractions. 6.03e: Approximate solutions by iteration - Use iterative formulae to find approximate solutions to equations. - Show that a root lies in a given interval and find it to a required degree of accuracy. 6.05a: Functions - Interpret and use function notation $f(x)$. - Find the inverse function $f^{-1}(x)$ and the composite function $fg(x)$. 7.01e: Trigonometric functions - Recognise and sketch the graphs of $y = \sin x$, $y = \cos x$ and $y = \tan x$. - Use trig graphs to find angles with the same sin, cos or tan value. 7.03a: Translations and reflections (Transformations of functions) - Sketch and interpret translations of graphs of the form $y = f(x + a)$ and $y = f(x) + a$. - Sketch and interpret reflections of graphs of the form $y = f(-x)$ and $y = -f(x)$.			- Convert a recurring decimal to an exact fraction. - Solve reverse percentage (original value) problems. - Apply percentage multipliers to compound change problems. - Simplify surd expressions including expanding brackets involving surds. - Rationalise the denominator of a fraction involving a surd. - Formulate and solve problems involving a quantity in direct and inverse proportion to a power or root of another. - Factorise quadratic expressions of the form $ax^2 + bx + c$ - Complete the square for a quadratic expression of the form $x^2 + bx + c$. - Solve simultaneous equations where one is linear and one is quadratic. - Rearrange complex formulae where the subject appears twice or involves a power or root. - Find the nth term of a quadratic sequence. - Find the nth term of a geometric sequence. - Find the equation of a tangent to a circle at a given point. - Calculate the area of sectors and segments.

	3.03b: Manipulating surds • Simplify surd expressions including expanding brackets involving surds. • Rationalise the denominator of a fraction involving a surd. 5.01b: Division in a given ratio • Split a quantity into two or more parts given the ratio of the parts. • Express the division of a quantity into two parts as a ratio. • Calculate one quantity from another given their ratio. 5.02a: Direct proportion • Set up and use equations of the form $y = kx$ to represent direct proportion. • Formulate and solve problems involving a quantity in direct proportion to a power or root of another. 5.02b: Inverse proportion • Set up and use equations of the form $y = k/x$ to represent inverse proportion. • Formulate and solve problems involving a quantity in inverse proportion to a power or root of another. 5.03a: Growth and decay • Solve compound interest and depreciation problems using multipliers. • Form and solve exponential growth and decay equations. • Interpret and explain results in growth and decay contexts. 6.01e: Factorising • Factorise quadratic expressions of the form $x^2 + bx + c$. • Factorise quadratic expressions of the form $ax^2 + bx + c$. 6.01f: Completing the square • Complete the square for a quadratic expression of the form $x^2 + bx + c$. • Use completing the square to solve quadratic equations and find the vertex of a parabola. 6.02c: Change the subject of a formula • Rearrange formulae where the subject appears once only. • Rearrange complex formulae where the subject appears twice or involves a power or root. 6.03b: Quadratic equations • Solve quadratic equations by factorising, by completing the	right-angled triangles. • Apply the cosine rule and area formula $\frac{1}{2}ab \sin C$ in context.	9.03b: Column vectors • Represent vectors in column vector notation. • Use column vectors to solve geometric problems.				• Calculate and interpret conditional probabilities formally. • Construct and interpret cumulative frequency graphs and histograms (equal and unequal class intervals). • Estimate the mean, median, quartiles and interquartile range from graphical representations. • Draw and interpret box plots. • Use the median and interquartile range to compare distributions. • Use the relationship between linear, area and volume scale factors in similar shapes. • Apply the sine rule, cosine rule and area formula $\frac{1}{2}ab \sin C$ in context. • Simplify algebraic fractions by cancelling common factors. • Add, subtract, multiply and divide algebraic fractions.
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	square, and using the quadratic formula. • Set up and solve quadratic equations from real-world contexts . 6.03c: Simultaneous equations • Solve pairs of linear simultaneous equations algebraically. • Solve simultaneous equations where one is linear and one is quadratic. 6.06b: Special sequences • Find the nth term of a quadratic sequence. • Find the nth term of a geometric sequence. • Recognise triangular, square and cube numbers, Fibonacci sequences and simple geometric progressions. 7.02b: Parallel and perpendicular lines • Identify parallel lines from their equations. • Find the equation of a perpendicular line through a given point. • Find the equation of a tangent to a circle at a given point. 7.04b: Gradients • Interpret the gradient of a straight line as a rate of change. • Estimate the gradient of a curve at a point by drawing a tangent. • Use instantaneous rates of change in context (e.g. velocity from a distance–time graph). 7.04c: Areas • Calculate or estimate the area under a graph using the trapezium rule. • Interpret the area under a graph in context (e.g. distance from a speed–time graph). 8.02d: Loci • Construct and interpret loci for sets of points equidistant from a point or line. • Identify and shade regions defined by intersections of loci. 9.01d: Combinations of transformations • Perform combinations of two or more transformations on a shape. • Describe fully a single transformation equivalent to a combination of transformations. 9.04b: Enlargement • Enlarge shapes using positive,						
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	fractional and negative scale factors from a given centre. 10.03d: Area of a circle • Use $A = \pi r^2$ to calculate the area of a circle. • Calculate the area of sectors and segments. 10.03e: Area of composite shapes • Find the area of composite shapes including those involving circular parts. • Subtract areas to find shaded regions. 10.05a: Pythagoras' theorem • Use Pythagoras' theorem in 2D and 3D contexts. • Apply in complex multi-step problems. 10.05b: Trigonometry in right-angled triangles • Use sin, cos and tan to find unknown sides and angles. • Apply in complex and 3D contexts. 11.02d: Tree diagrams • Construct and use tree diagrams for two or more events. 11.02e: The addition law of probability • Apply the full addition law $P(A \cup B) = P(A) + P(B) - P(A \cap B)$. 11.02f: The multiplication law of probability and conditional probability • Use $P(A \text{ and } B) = P(A) \times P(B A)$ for dependent events. • Calculate and interpret conditional probabilities formally. 12.02b: Grouped data • Construct and interpret cumulative frequency graphs and histograms (equal and unequal class intervals). • Estimate the mean, median, quartiles and interquartile range from graphical representations. 12.03a: Summary statistics • Draw and interpret box plots. • Use the median and interquartile range to compare distributions.					
Prior Knowledge	N2 - Factors, multiples and primes N5 - Powers and roots N7 - Fractions, decimals and percentages N8 - Fractions and percentages as operators R5 - Dividing in a ratio R8 - Percentage change	G6 - Triangles and congruence G9 - Congruence, similarity and enlargement G12 - Proof and geometrical reasoning G13 - Pythagoras and trigonometry	A4 - Simplifying and manipulating expressions A9 - Linear and quadratic graphs A10 - Graph interpretation G7 - Properties of shapes G8 - Transformations G12 - Proof and geometrical			

		R9 - Direct and inverse proportion A4 - Simplifying and manipulating expressions A5 - Formulae A9 - Linear and quadratic graphs A11 - Straight line graphs A12 - Using graphs to estimate A14 - Sequences G1 - Perimeter, area and volume formulae G2 - Circles and composite shapes G4 - Constructions G8 - Transformations G9 - Congruence, similarity and enlargement G13 - Pythagoras and trigonometry P2 - Sum of probabilities P3 - Sets and Venn diagrams P4 - Sample spaces S1 - Distributions and averages S2 - Tables, charts and diagrams		reasoning G13 - Pythagoras and trigonometry				
	Future links	A-Level Pure: algebra and functions, surds, indices, quadratics A-Level Pure: coordinate geometry, straight line graphs, circles A-Level Statistics: probability, conditional probability, statistical distributions A-Level Statistics: data presentation, measures of location and spread A-Level Mechanics: kinematics and rates of change	A-Level Pure: trigonometry – sine and cosine rules, area formula A-Level Pure: proof and geometric reasoning A-Level Pure: vectors in 2D and 3D	A-Level Pure: functions, composite and inverse functions A-Level Pure: trigonometric graphs and transformations A-Level Pure: circles and circle theorems in coordinate geometry A-Level Pure: vectors and geometric proof				
	Assessment	- Weekly Sparx Maths homework - End of unit assessment	- Weekly Sparx Maths homework - Grade indicator assessment on all GCSE content covered up to now	- Weekly Sparx Maths homework - End of unit assessment	- Weekly Sparx Maths homework - Grade indicator assessment on all GCSE content covered up to now	GCSE exams	GCSE exams	
Year 12 Pure SCA	Unit	Pure: Algebraic Expressions (1.1–1.6) Pure: Quadratics (2.1–2.6) Pure: Equations and Inequalities (3.1–3.7) Pure: Graphs and Transformations (4.1–4.7)	Pure: Straight Line Graphs (5.1–5.5) Pure: Circles (6.1–6.5) Pure: Algebraic Methods (7.1–7.5) Pure: The Binomial Expansion (8.1–8.5)	Pure: Trigonometric Ratios (9.1–9.6) Pure: Trigonometric Identities and Equations (10.1–10.6) Pure: Differentiation (12.1–12.6)	Pure: Differentiation (12.7–12.11) Pure: Integration (13.1–13.7) Pure: Exponentials (14.1–14.3)	Pure: Logarithms (14.4–14.8) Pure: Vectors (11.1–11.6) Year 13 Pure: Algebraic Methods (1.1–1.5)	Year 13 Pure: Binomial Expansion (4.1–4.3) Year 13 Pure: Vectors (12.1–12.4) Pure Revision and Exam Preparation	
	Knowledge + Skills	1.1–1.6 Algebraic Expressions - Use index laws. - Expand brackets and factorise expressions. - Use negative and fractional indices. - Simplify surds and rationalise denominators. 2.1–2.6 Quadratics - Solve quadratic equations by factorising, completing the square and using the quadratic formula. - Use function notation. - Sketch quadratic graphs and identify turning points. - Interpret the discriminant. - Model real-life situations using	5.1–5.5 Straight Line Graphs - Calculate gradients and equations of straight lines. - Use parallel and perpendicular gradients. - Solve length and area problems on coordinate axes. - Model contextual situations using straight line graphs. 6.1–6.5 Circles - Find midpoints and perpendicular bisectors. - Use the equation of a circle. - Find intersections of straight lines and circles. - Use tangent and chord properties. - Solve problems involving circles	9.1–9.6 Trigonometric Ratios - Use the sine rule and cosine rule. - Calculate the area of a triangle using sine. - Understand radians and arc length. - Use sectors and segments. - Sketch and interpret graphs of sine, cosine and tangent functions. - Apply transformations to trigonometric graphs. 10.1–10.6 Trigonometric Identities and Equations - Use exact trigonometric values. - Use identities involving sine, cosine and tangent. - Simplify trigonometric expressions. - Solve trigonometric equations in given intervals.	12.7–12.11 Differentiation - Determine increasing and decreasing functions. - Use second derivatives to classify stationary points. - Find and interpret stationary points. - Sketch gradient functions. - Apply differentiation in modelling and problem-solving contexts. 13.1–13.7 Integration - Integrate polynomial functions. - Use indefinite and definite integrals. - Find functions from derivatives. - Calculate areas under curves and between lines.	14.4–14.8 Logarithms - Use laws of logarithms to simplify expressions. - Solve equations involving logarithms. - Work with natural logarithms. - Interpret logarithmic scales and non-linear data. - Apply logarithms in modelling contexts. 11.1–11.6 Vectors - Represent vectors geometrically and algebraically. - Calculate magnitude and direction of vectors. - Use position vectors and vector notation. - Solve geometric problems	Year 13 Pure: 4.1–4.3 Binomial Expansion - Expand expressions using advanced binomial methods. - Use binomial expansion with fractional and negative powers. - Apply binomial methods in algebraic problem solving. Revision and Exam Preparation - Consolidate all Year 12 Pure content. - Apply calculus, algebra and trigonometry in synoptic problems. - Develop exam technique using mixed exam-style questions. - Strengthen mathematical communication and reasoning skills.	- Interpret the discriminant. - Model real-life situations using quadratics. - Model contextual situations using straight line graphs. - Use tangent and chord properties. - Solve problems involving circles and triangles. - Apply transformations to trigonometric graphs. - Prove identities using algebraic and trigonometric methods. - Apply differentiation to graphs and modelling contexts. - Interpret rates of change.

		quadratics. 3.1–3.7 Equations and Inequalities • Solve linear and quadratic simultaneous equations. • Interpret simultaneous equations graphically. • Solve linear and quadratic inequalities. • Represent inequalities and regions graphically. 4.1–4.7 Graphs and Transformations • Sketch cubic, quartic and reciprocal graphs. • Find points of intersection. • Translate and stretch graphs. • Transform functions and interpret key features.	and triangles. 7.1–7.5 Algebraic Methods • Simplify algebraic fractions. • Divide polynomials. • Use the factor theorem. • Construct mathematical proofs. • Use proof by exhaustion and disproof by counter-example. 8.1–8.5 The Binomial Expansion • Use factorial notation. • Expand brackets using the binomial expansion. • Find individual coefficients. • Use binomial expansion for estimation.	• Prove identities using algebraic and trigonometric methods. 12.1–12.6 Differentiation • Differentiate polynomial functions. • Use gradients, tangents and normals. • Differentiate functions using standard rules. • Apply differentiation to graphs and modelling contexts. • Interpret rates of change.	• Interpret areas below the x-axis correctly. 14.1–14.3 Exponentials • Understand exponential functions and graphs. • Use and interpret the function $y=e^x$ • Model growth and decay using exponential functions.	involving vectors. • Apply vectors in modelling contexts. Year 13 Pure: 12.1–12.4 Vectors • Understand vectors in three dimensions. • Use scalar products. • Solve geometric problems using 3D vectors. • Apply vectors in mechanics contexts. Year 13 Pure: 1.1–1.5 Algebraic Methods • Use proof by contradiction. • Simplify algebraic fractions. • Use partial fractions including repeated factors. • Apply algebraic division methods. • Use advanced algebraic manipulation in unfamiliar contexts.	• Apply differentiation in modelling and problem-solving contexts. • Interpret areas below the x-axis • Model growth and decay using exponential functions. • Apply logarithms in modelling contexts. • Solve geometric problems involving vectors. • Apply vectors in modelling contexts. • Use partial fractions including repeated factors. • Apply binomial methods in algebraic problem solving.	
	Prior Knowledge	3.01a – Laws of indices 3.03a – Simplifying surds 6.01a – Algebraic terminology and proofs 6.01b – Collecting like terms 6.01c – Simplifying products and quotients 6.01d – Multiplying out brackets 6.01e – Factorising 6.03a – Linear equations in one unknown 6.03b – Quadratic equations 6.04a – Linear inequalities 6.04b – Quadratic inequalities 7.03a – Plotting graphs 7.04a – Transformations of graphs	6.01c – Simplifying products and quotients 6.01d – Multiplying out brackets 6.01e – Factorising 6.02c – Change the subject of a formula 6.03a – Linear equations in one unknown 6.03b – Quadratic equations 7.01a – Coordinates in the Cartesian plane 7.01b – Gradients and intercepts 7.02a – Distance between two points 7.02b – Midpoints 8.03a – Angles in parallel lines 10.03a – Pythagoras’ theorem	10.05a – Trigonometry 10.05b – Sine rule and cosine rule 10.05c – Area of a triangle using sine 7.03a – Plotting graphs 7.04a – Transformations of graphs 6.03a – Linear equations in one unknown 6.03b – Quadratic equations 7.01b – Gradients and intercepts 12.01a – Differentiation from first principles 12.01b – Differentiation of polynomials	12.01a – Differentiation from first principles 12.01b – Differentiation of polynomials 12.02a – Tangents and normals 12.03a – Integration 12.03b – Definite integration 7.03a – Plotting graphs 7.04a – Transformations of graphs 6.03a – Linear equations in one unknown 6.03b – Quadratic equations	3.01a – Laws of indices 6.01c – Simplifying products and quotients 6.01d – Multiplying out brackets 6.01e – Factorising 6.03a – Linear equations in one unknown 7.01a – Coordinates in the Cartesian plane 7.01b – Gradients and intercepts 9.01a – Vectors 9.01b – Vector arithmetic 10.03a – Pythagoras’ theorem	1.1–1.6 Algebraic Expressions 2.1–2.6 Quadratics 3.1–3.7 Equations and Inequalities 4.1–4.7 Graphs and Transformations 5.1–5.5 Straight Line Graphs 6.1–6.5 Circles 7.1–7.5 Algebraic Methods 8.1–8.5 The Binomial Expansion 9.1–9.6 Trigonometric Ratios 10.1–10.6 Trigonometric Identities and Equations 11.1–11.6 Vectors 12.1–12.11 Differentiation 13.1–13.7 Integration 14.1–14.8 Exponentials and Logarithms Year 13 Pure: 1.1–1.5 Algebraic Methods	
	Future links	5.1–5.5 Straight line graphs 6.1–6.5 Circles 7.1–7.5 Algebraic methods 8.1–8.5 The binomial expansion 12.1–12.11 Differentiation 13.1–13.7 Integration 14.1–14.8 Exponentials and logarithms Year 13 Pure: 1.1–1.5 Algebraic methods 2.1–2.6 Functions and graphs 5.1–5.4 Numerical methods 7.1–7.10 Differentiation	9.1–9.6 Trigonometric ratios 10.1–10.6 Trigonometric identities and equations 12.1–12.11 Differentiation 13.1–13.7 Integration 14.1–14.8 Exponentials and logarithms Year 13 Pure: 1.1–1.5 Algebraic methods 4.1–4.3 Binomial expansion 5.1–5.4 Numerical methods 7.1–7.10 Differentiation	12.7–12.11 Differentiation applications 13.1–13.7 Integration 14.1–14.8 Exponentials and logarithms 11.1–11.6 Vectors Year 13 Pure: 4.1–4.7 Trigonometry 7.1 Differentiating sin x and cos x 7.2 Differentiating exponentials and logarithms 7.3 Product rule 7.4 Quotient rule 7.5 Chain rule 7.8 Rates of change Year 13 Mechanics: 6.1–6.4 Projectile motion 8.3 Variable acceleration in one dimension	14.4–14.8 Logarithms and exponential modelling 11.1–11.6 Vectors Year 13 Pure: 5.1–5.4 Numerical methods 7.1–7.8 Further calculus 8.1–8.5 Vectors Year 13 Mechanics: 6.1–6.4 Projectile motion 8.3 Variable acceleration in one dimension 8.4 Differentiating vectors 8.5 Integrating vectors	Year 13 Pure: 4.1–4.3 Binomial expansion 5.1–5.4 Numerical methods 6.1–6.7 Functions and graphs 7.1–7.10 Differentiation 11.1–11.11 Integration 12.1–12.4 Vectors	Year 13 Pure: 5.1–5.4 Numerical methods 6.1–6.7 Functions and graphs 7.1–7.10 Differentiation 8.1–8.5 Parametric equations 9.1–9.10 Further differentiation 10.1–10.4 Numerical methods 11.1–11.11 Integration 12.1–12.4 Vectors	
	Assessment	• End of unit assessed homework	• End of unit assessed homework • Grade Indicator 1	• End of unit assessed homework	• End of unit assessed homework • Grade Indicator 2	• End of unit assessed homework	• End of unit assessed homework • End of year grade indicator	

Year 12 Statistics and Mechanics SCA								
	Unit	Statistics: Data Collection (1.1–1.5) Statistics: Measures of Location and Spread (2.1–2.5) Statistics: Representations of Data (3.1–3.5)	Statistics: Correlation (4.1–4.2) Probability (5.1–5.4) Statistical Distributions (6.1–6.3)	Statistics: Hypothesis Testing (7.1–7.4) Mechanics: Modelling in Mechanics (8.1–8.4) Mechanics: Constant Acceleration (9.1–9.3)	Mechanics: Constant Acceleration (9.4–9.5) Mechanics: Forces and Motion (10.1–10.6)	Mechanics: Variable Acceleration (11.1–11.5) Statistics and Mechanics Problem Solving	Statistics and Mechanics Revision Exam Preparation Application of modelling and problem solving	
	Knowledge + Skills	1.1–1.5 Data Collection - Understand populations, samples and censuses. - Use random, systematic, stratified, quota and opportunity sampling. - Identify quantitative, qualitative, discrete and continuous data. - Interpret and use the large data set. 2.1–2.5 Measures of Location and Spread - Calculate mean, median, mode and quartiles. - Calculate variance and standard deviation. - Use coding techniques. - Compare data sets using measures of spread. 3.1–3.5 Representations of Data - Draw and interpret box plots, cumulative frequency graphs and histograms. - Identify outliers and compare distributions.	4.1–4.2 Correlation - Plot and interpret scatter graphs. - Understand correlation and causation. - Use regression lines and interpolation. 5.1–5.4 Probability - Calculate probabilities using set notation. - Use Venn diagrams and tree diagrams. - Understand mutually exclusive and independent events. 6.1–6.3 Statistical Distributions - Understand discrete probability distributions. - Use the binomial distribution and cumulative probabilities. - Model real-life situations using probability distributions.	7.1–7.4 Hypothesis Testing - Understand hypotheses, critical regions and significance levels. - Carry out one-tailed and two-tailed tests using the binomial distribution. - Interpret conclusions in context. 8.1–8.4 Modelling in Mechanics - Understand modelling assumptions in mechanics. - Use SI units and vectors. - Distinguish between scalar and vector quantities. 9.1–9.3 Constant Acceleration - Interpret displacement-time and velocity-time graphs. - Use constant acceleration formulae. - Solve problems involving motion in one dimension.	9.4–9.5 Constant Acceleration - Use SUVAT equations in more complex contexts. - Model motion under gravity. - Solve vertical motion problems involving acceleration. - Apply kinematics methods to connected problems. 10.1–10.6 Forces and Motion - Draw and interpret force diagrams. - Apply Newton’s Laws of Motion. - Resolve forces horizontally and vertically. - Calculate resultant forces and acceleration. - Solve connected particle and pulley problems. - Model motion using forces and equilibrium.	11.1–11.5 Variable Acceleration - Use differentiation and integration in kinematics. - Understand displacement, velocity and acceleration as functions of time. - Solve maxima and minima problems in mechanics. - Derive and use kinematics formulae using calculus. - Apply calculus methods to motion in one dimension. Statistics and Mechanics Problem Solving - Apply statistical modelling techniques in unfamiliar contexts. - Solve multi-step mechanics problems involving forces and motion. - Interpret mathematical models and solutions in context. - Develop mathematical communication and reasoning skills. - Strengthen exam technique using mixed problem-solving tasks.	- Consolidate all Statistics and Mechanics content taught throughout Year 12. - Apply statistical modelling techniques to unfamiliar contexts. - Solve multi-step mechanics problems involving forces, motion and kinematics. - Develop mathematical communication and interpretation skills. - Improve exam technique using mixed exam-style questions and problem-solving tasks. - Strengthen calculator fluency and interpretation of statistical outputs. - Apply mathematical reasoning in unfamiliar and synoptic contexts.	
	Prior Knowledge	12.01a – Populations and samples 12.02a – Categorical and numerical data 12.02b – Grouped data 12.03a – Summary statistics 12.03b – Misrepresenting data 12.03c – Bivariate data 12.03d – Outliers 11.01a – Populations and samples 2.02a – Decimals and fractions 5.02a – Direct proportion	12.03c – Bivariate data 12.03d – Outliers 11.01a – Populations and samples 11.02a – Experimental probability 11.02b – Theoretical probability 11.02c – Frequency trees 11.02d – Venn diagrams 11.02e – Tree diagrams 2.02a – Decimals and fractions 5.02a – Direct proportion	6.02d – Recall and use standard formulae 6.02e – Use kinematics formulae 7.01a – Coordinates in the Cartesian plane 7.01b – Gradients and intercepts 9.01a – Vectors 9.01b – Vector arithmetic 10.01a – Units and conversions 10.03a – Pythagoras’ theorem 10.05a – Trigonometry 11.02e – Tree diagrams 6.03a – Linear equations in one unknown	6.02d – Recall and use standard formulae 6.02e – Use kinematics formulae 7.01a – Coordinates in the Cartesian plane 7.01b – Gradients and intercepts 9.01a – Vectors 9.01b – Vector arithmetic 10.03a – Pythagoras’ theorem 10.05a – Trigonometry 6.03a – Linear equations in one unknown 9.1–9.3 Constant acceleration	10.1–10.6 Forces and Motion 12.01a – Differentiation from first principles 12.01b – Differentiation of polynomials 12.02a – Tangents and normals 12.03a – Integration 12.03b – Definite integration 9.01a – Vectors 9.01b – Vector arithmetic 6.02e – Use kinematics formulae	1.1–1.5 Data Collection 2.1–2.5 Measures of Location and Spread 3.1–3.5 Representations of Data 4.1–4.2 Correlation 5.1–5.4 Probability 6.1–6.3 Statistical Distributions 7.1–7.4 Hypothesis Testing 8.1–8.4 Modelling in Mechanics 9.1–9.5 Constant Acceleration 10.1–10.6 Forces and Motion 11.1–11.5 Variable Acceleration	
	Future links	4.1–4.2 Correlation 5.1–5.4 Probability 6.1–6.3 Statistical distributions 7.1–7.4 Hypothesis testing Year 13 Statistics: 1.1 Exponential models 1.2 Measuring correlation 1.3 Hypothesis testing for zero correlation 2.1–2.5 Conditional probability 3.1–3.7 The normal distribution	7.1–7.4 Hypothesis testing Year 13 Statistics: 1.2 Measuring correlation 1.3 Hypothesis testing for zero correlation 2.1–2.5 Conditional probability 3.1–3.7 The normal distribution Year 13 Pure: 14.6 Solving equations using logarithms	9.4–9.5 Constant acceleration 10.1–10.6 Forces and Motion 11.1–11.5 Variable acceleration Year 13 Mechanics: 5.1 Resolving forces 5.2 Inclined planes 5.3 Friction 6.1 Horizontal projection 6.2 Horizontal and vertical components 6.3 Projection at any angle 6.4 Projectile motion formulae 7.1 Static particles 7.5 Dynamics and inclined planes 7.6 Connected particles 8.1 Vectors in kinematics 8.3 Variable acceleration in one	11.1–11.5 Variable acceleration Year 13 Mechanics: 4.1 Moments 4.2 Resultant moments 4.3 Equilibrium 4.4 Centres of mass 5.1 Resolving forces 5.2 Inclined planes 5.3 Friction 6.1 Horizontal projection 6.2 Horizontal and vertical components 6.3 Projection at any angle 7.1 Static particles 7.5 Dynamics and inclined planes 7.6 Connected particles 8.1 Vectors in kinematics	Year 13 Mechanics: 4.1 Moments 4.2 Resultant moments 4.3 Equilibrium 4.4 Centres of mass 5.1 Resolving forces 5.2 Inclined planes 5.3 Friction 6.1 Horizontal projection 6.2 Horizontal and vertical components 6.3 Projection at any angle 6.4 Projectile motion formulae 7.5 Dynamics and inclined planes 7.6 Connected particles 8.1 Vectors in kinematics 8.3 Variable acceleration in one	Year 13 Statistics: 1.1 Exponential models 1.2 Measuring correlation 1.3 Hypothesis testing for zero correlation 2.1–2.5 Conditional probability 3.1–3.7 The normal distribution Year 13 Mechanics: 4.1 Moments 4.2 Resultant moments 4.3 Equilibrium 4.4 Centres of mass 5.1 Resolving forces 5.2 Inclined planes 5.3 Friction 6.1 Horizontal projection 6.2 Horizontal and vertical	

				dimension 8.4 Differentiating vectors 8.5 Integrating vectors Year 13 Pure: 9.1 Differentiating sin x and cos x 9.2 Differentiating exponentials and logarithms 9.9 Rates of change 11.1–11.10 Integration 12.1–12.4 Vectors and applications	Year 13 Pure: 9.9 Rates of change 11.1–11.10 Integration 12.1–12.4 Vectors and applications	dimension 8.4 Differentiating vectors 8.5 Integrating vectors Year 13 Pure: 9.9 Rates of change 11.1–11.10 Integration 11.11 Solving differential equations 12.1–12.4 Vectors and applications	components 6.3 Projection at any angle 6.4 Projectile motion formulae 7.1 Static particles 7.2 Modelling with statics 7.3 Friction and static particles 7.4 Static rigid bodies 7.5 Dynamics and inclined planes 7.6 Connected particles 8.1 Vectors in kinematics 8.2 Vector methods with projectiles 8.3 Variable acceleration in one dimension 8.4 Differentiating vectors 8.5 Integrating vectors Year 13 Pure: 9.1–9.9 Differentiation 10.1–10.4 Numerical methods 11.1–11.10 Integration 12.1–12.4 Vectors and applications	
	Assessment	End of unit assessed homework	- End of unit assessed homework - Grade Indicator 1	End of unit assessed homework	- End of unit assessed homework - Grade Indicator 2	End of unit assessed homework	- End of unit assessed homework - End of year grade indicator	
Year 13 Pure CFI	Unit	2: Functions and graphs 5: Radians and trigonometry 6: Trigonometric functions 7: Trigonometry and modelling	8: Parametric equations 9: Differentiation	11: Integration 3: Sequences and series	10: Numerical methods			
	Knowledge + Skills	2.1 The modulus function - Understand and use modulus notation. - Sketch graphs involving modulus functions. - Solve equations and inequalities involving modulus. 2.2 Functions and mappings - Understand the concepts of domain, range and mappings. - Use function notation correctly. - Interpret and apply mappings between sets. 2.3 Composite functions - Form composite functions. - Evaluate and simplify composite functions. - Solve problems involving composite functions. 2.4 Inverse functions - Understand the conditions for inverse functions. - Find inverse functions algebraically. - Verify inverse functions using composition. 2.5 $y = f(x)$ and $y = f(x)$ - Sketch graphs involving modulus transformations. - Understand the effect of modulus on graphs.	8.1 Parametric equations - Understand parametric representations of curves. - Convert between parametric and Cartesian forms. - Sketch simple parametric curves. 8.2 Using trigonometric identities - Apply trigonometric identities in parametric contexts. - Simplify parametric equations. - Solve parametric problems algebraically. 8.3 Curve sketching - Identify features of parametric curves. - Sketch curves and determine direction of motion. - Interpret graphical behaviour. 8.4 Points of intersection - Find intersections of parametric curves. - Solve simultaneous equations algebraically. - Interpret graphical solutions. 8.5 Modelling with parametric equations - Apply parametric equations in modelling contexts. - Interpret motion and trajectories. - Construct mathematical models.	11.1 Integrating standard functions - Integrate polynomial, exponential and trigonometric functions. - Reverse differentiation techniques. - Use integration fluently. 11.2 Integrating $f(ax + b)$ - Integrate composite linear functions. - Apply reverse chain rule methods. - Simplify integrals efficiently. 11.3 Using trigonometric identities - Simplify integrands using trig identities. - Integrate trigonometric expressions. - Manipulate expressions before integration. 11.4 Reverse chain rule - Integrate functions using reverse differentiation methods. - Recognise composite structures. - Apply substitutions mentally. 11.5 Integration by substitution - Use substitutions to simplify integrals. - Select appropriate substitutions. - Solve definite and indefinite integrals. 11.6 Integration by parts - Integrate products of functions. - Apply integration by parts	10.1 Locating roots - Identify intervals containing roots. - Use change of sign methods. - Interpret graphical behaviour. 10.2 Iteration - Use iterative formulae. - Determine convergence and divergence. - Solve equations numerically. 10.3 The Newton–Raphson method - Apply Newton–Raphson iterations. - Approximate roots accurately. - Interpret tangent methods graphically. 10.4 Applications to modelling - Apply numerical methods in context. - Interpret numerical solutions. - Evaluate accuracy of approximations.			

	- Interpret transformed functions graphically. 2.6 Combining transformations - Apply combinations of graph transformations. - Describe transformations algebraically. - Sketch transformed graphs accurately. 2.7 Solving modulus problems - Solve equations involving modulus. - Solve inequalities involving modulus. - Apply modulus in contextual problems. 5.1 Radians - Convert between degrees and radians. - Use radian measure in calculations. - Understand radians as a measure of angle. 5.2 Arc length - Calculate arc lengths in circles. - Use arc length formulae in exact and decimal form. - Solve problems involving sectors. 5.3 Area of sectors and segments - Calculate areas of sectors and segments. - Apply trigonometry in circle geometry problems. - Solve contextual problems involving sectors and segments. 5.4 Solving trigonometric equations - Solve trigonometric equations in given intervals. - Use exact trigonometric values. - Apply trigonometric identities when solving equations. 5.5 Small angle approximations - Use standard small angle approximations. - Simplify trigonometric expressions using approximations. - Apply approximations in modelling contexts. 7.1 Addition formulae - Use trigonometric addition and subtraction formulae. - Expand and simplify trigonometric expressions. - Find exact trigonometric values. 7.2 Using the angle addition formulae	9.1 Differentiating sin x and cos x - Differentiate trigonometric functions. - Apply differentiation rules accurately. - Use derivatives in problem solving. 9.2 Differentiating exponentials and logarithms - Differentiate exponential and logarithmic functions. - Apply differentiation fluently. - Solve problems involving exponential growth and decay. 9.3 The chain rule - Differentiate composite functions. - Apply the chain rule in increasingly complex contexts. - Combine multiple differentiation techniques. 9.4 The product rule - Differentiate products of functions. - Apply product rule accurately. - Simplify derivative expressions. 9.5 The quotient rule - Differentiate quotients of functions. - Apply quotient rule in algebraic contexts. - Simplify rational derivatives. 9.6 Differentiating trigonometric functions - Differentiate advanced trig expressions. - Combine trig differentiation with other rules. - Solve calculus problems involving trigonometric functions. 9.7 Parametric differentiation - Differentiate parametric equations. - Find gradients and tangents. - Solve problems involving parametric curves. 9.8 Implicit differentiation - Differentiate implicitly defined equations. - Find gradients and tangent equations. - Apply implicit differentiation in problem solving. 9.9 Using second derivatives - Determine concavity of curves. - Classify stationary points. - Interpret graphical behaviour using second derivatives.	repeatedly where needed. - Simplify integration steps logically. 11.7 Partial fractions - Integrate rational functions using partial fractions. - Decompose algebraic fractions. - Solve logarithmic integration problems. 11.8 Finding areas - Calculate areas under curves. - Use definite integration. - Find areas between curves. 11.9 The trapezium rule - Approximate integrals numerically. - Apply the trapezium rule. - Compare exact and approximate solutions. 11.10 Solving differential equations - Solve separable differential equations. - Apply initial conditions. - Model real-world situations. 11.11 Modelling with differential equations - Apply differential equations in context. - Interpret growth and decay models. - Construct and solve mathematical models. 3.1 Arithmetic sequences - Generate arithmetic sequences. - Use nth term formulae. - Solve problems involving arithmetic progressions. 3.2 Arithmetic series - Use formulae for arithmetic series. - Calculate sums of arithmetic sequences. - Apply arithmetic series in contextual problems. 3.3 Geometric sequences - Generate geometric sequences. - Use common ratios and nth term formulae. - Solve problems involving geometric progressions. 3.4 Geometric series - Calculate sums of finite geometric series. - Apply geometric series in modelling and finance contexts. - Interpret geometric growth and decay. 3.5 Sum to infinity - Understand conditions for convergence.				
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		• Apply compound angle identities. • Solve trigonometric problems using addition formulae. • Simplify exact trigonometric expressions. 7.3 Double-angle formulae • Derive double-angle identities. • Use double-angle formulae in equations and proofs. • Simplify trigonometric expressions. 7.4 Solving trigonometric equations • Solve advanced trigonometric equations. • Use identities to simplify equations. • Interpret solutions in intervals. 7.5 Simplifying $a \cos x \pm b \sin x$ • Use the auxiliary angle method. • Rewrite expressions in the form $R \cos(x \pm \alpha)$. • Solve trigonometric equations using auxiliary angles. 7.6 Proving trigonometric identities • Construct proofs involving trigonometric identities. • Use multiple identities together. • Manipulate trig expressions efficiently. 7.7 Modelling with trigonometric functions • Model situations using trigonometric functions. • Interpret amplitude, period and phase shift. • Apply trigonometric models in context.	9.10 Rates of change • Solve related rates problems. • Model changing quantities. • Interpret rates in context.	• Calculate sums to infinity. • Solve contextual problems involving infinite series. 3.6 Sigma notation • Use sigma notation fluently. • Expand and simplify summations. • Apply summation formulae. 3.7 Recurrence relations • Generate sequences recursively. • Interpret recurrence relations. • Model iterative processes. 3.8 Modelling with series • Apply arithmetic and geometric models. • Interpret series in context. • Solve modelling problems involving sequences and series.				
Prior Knowledge	GCSE Prior Links • 6.01a–g Algebraic expressions and formulae – simplifying expressions, factorising, algebraic fractions and rearranging formulae. • 3.01a–c Indices and surds – laws of indices, fractional indices and surd manipulation. • 10.05a–e Trigonometry and mensuration – SOHCAHTOA, exact trig values, sine rule, cosine rule and area of triangles. • 8.03a–d Angles – angle facts, polygons and parallel lines. • 5.02a–b Direct and inverse proportion –	GCSE Prior Links • 6.03a–d Equations – solving linear, quadratic and simultaneous equations. • 6.01a–g Algebraic manipulation – factorising, expanding and rearranging. • 3.01a–c Indices and surds – fractional powers and simplification. • 10.05a–e Trigonometry – exact values and trig relationships. • 4.01a–c Approximation and estimation – interpreting numerical accuracy. Year 12 Pure Prior Links	GCSE Prior Links • 6.01a–g Algebraic manipulation – factorising and algebraic fractions. • 6.03a–d Equations – solving equations and rearranging expressions. • 3.01a–c Indices and surds – powers and fractional indices. • 2.03c Percentage change – repeated multipliers and growth/decay. • 10.03 Area calculations – area under shapes and trapezium foundations. • 4.01a–c Approximation and estimation – accuracy in numerical methods. Year 12 Pure Prior Links	GCSE Prior Links • 6.03a–d Equations – solving equations algebraically and graphically. • 4.01a–c Approximation, estimation and bounds – iterative accuracy and error intervals. • 3.01a–c Indices and surds – evaluating powers and roots. • 6.02b Substitute into formulae – evaluating iterative formulae numerically. Year 12 Pure Prior Links • Algebraic and graphical methods for solving equations.				

		proportional reasoning in modelling contexts. • 4.01a–c Approximation and bounds – estimation and accuracy in calculations. Year 12 Pure Prior Links • Algebra and functions – composite functions, inverse functions and graph transformations. • Coordinate geometry – straight lines, circles and graph sketching. • Trigonometric graphs and identities – sine, cosine, tangent graphs and identities. • Exponentials and logarithms – exponential models and logarithmic manipulation. Year 12 Statistics Prior Links • Interpreting graphs and modelling relationships. • Approximation and estimation in contextual problems. Year 12 Mechanics Prior Links • Trigonometry in forces and kinematics problems. • Modelling with vectors and motion contexts.	• Coordinate geometry and gradients. • Parametric equations and conversion between forms. • Differentiation from first principles. • Tangents, normals and stationary points. • Chain rule foundations from composite functions. • Exponentials and logarithms. Year 12 Statistics Prior Links • Interpreting rates of change in context. • Graph interpretation and modelling trends. Year 12 Mechanics Prior Links • Kinematics graphs and rates of change. • Velocity and acceleration interpretation. • Parametric motion contexts.	• Differentiation techniques and reverse processes. • Integration of polynomials. • Arithmetic and geometric sequences and series. • Exponentials and logarithms. • Trigonometric identities. Year 12 Statistics Prior Links • Financial modelling and growth/decay contexts. • Numerical approximation and interpretation of results. Year 12 Mechanics Prior Links • Area under velocity-time graphs. • Modelling motion and rates of change. • Kinematics formulae and interpretation of displacement.	• Differentiation and tangent gradients. • Functions and graph sketching. • Iteration and recurrence relations from sequences. Year 12 Statistics Prior Links • Approximation and interpretation of numerical results. • Evaluating accuracy and validity of solutions. Year 12 Mechanics Prior Links • Numerical interpretation of motion models. • Approximation in kinematics and modelling contexts.		
Future links	Year 13 Pure • Parametric equations • Differentiation • Integration • Numerical methods Year 13 Statistics • Statistical modelling • Large data set interpretation Year 13 Mechanics • Forces • Kinematics • Motion modelling Further Mathematics • Complex numbers • Polar coordinates • Hyperbolic functions • Proof by induction	Year 13 Pure • Integration techniques • Numerical methods • Sequences and series • Curve sketching Year 13 Statistics • Statistical modelling • Exponential models Year 13 Mechanics • Velocity and acceleration • Parametric motion • Optimisation Further Mathematics • Differential equations • Hyperbolic functions • Further coordinate systems • Further numerical methods	Year 13 Pure • Differential equations • Numerical integration • Exponential modelling • Optimisation problems Year 13 Statistics • Financial mathematics • Growth and decay models Year 13 Mechanics • Displacement and velocity • Differential equations in mechanics • Area under graphs Further Mathematics • Further calculus • Complex series • Numerical solutions of differential equations • Polar integration	Year 13 Pure • Differential equations • Numerical integration • Recursive processes Year 13 Statistics • Statistical estimation • Model validity Year 13 Mechanics • Numerical motion modelling • Approximation methods Further Mathematics • Numerical differential equations • Simpson’s rule • Convergence and divergence methods			
Assessment	• End of unit assessed homework	• End of unit assessed homework	• End of unit assessed homework	• End of unit assessed homework	• A Level Exams	• A Level Exams	

			Grade Indicator 1		Grade Indicator 2			
Year 13 Statistics and Mechanics DEH	Unit	2: Conditional probability 1: Regression, correlation and hypothesis testing 3: The normal distribution	5: Forces and friction 7: Applications of forces	4: Moments	7.4: Static rigid bodies 6: Projectiles	8: Further kinematics Revision	Revision	
	Knowledge + Skills	2.1 Set notation - Understand set notation in probability. - Use union, intersection and complement notation. - Interpret and draw Venn diagrams. - Solve probability problems using set notation. 2.2 Conditional probability - Understand conditional probability notation. - Calculate conditional probabilities. - Use probability formulae in context. 2.3 Conditional probabilities in Venn diagrams - Solve probability problems using Venn diagrams. - Interpret overlapping events. - Calculate probabilities from Venn diagrams. 2.4 Probability formulae - Use probability formulae fluently. - Solve problems involving independent and mutually exclusive events. - Rearrange probability expressions. 2.5 Tree diagrams - Construct probability tree diagrams. - Calculate probabilities from tree diagrams. - Solve conditional probability problems using trees. 1.1 Exponential models - Understand exponential models in bivariate data. - Use changes of variable to linearise data. - Estimate coefficients in exponential models. - Interpret exponential relationships. 1.2 Measuring correlation - Understand and calculate the product moment correlation coefficient (PMCC). - Interpret the strength and direction of correlation. - Decide whether a linear model is appropriate.	3.4 The standard normal distribution - Understand the standard normal distribution. - Convert values using z-scores. - Use standard normal tables and calculator functions. 3.5 Finding μ and σ - Determine the mean and standard deviation of normal distributions. - Solve problems involving distribution parameters. - Interpret values of μ and σ in context. 3.6 Approximating a binomial distribution - Approximate binomial distributions using the normal distribution. - Apply continuity correction correctly. - Compare exact and approximate probabilities. 3.7 Hypothesis testing with the normal distribution - Carry out hypothesis tests using the normal distribution. - Interpret critical regions and p-values. - Write conclusions in context. 5.1 Resolving forces - Resolve forces horizontally and vertically. - Use trigonometry in force problems. - Draw and interpret force diagrams. 5.2 Inclined planes - Model forces on inclined planes. - Resolve forces parallel and perpendicular to slopes. - Solve equilibrium and motion problems on slopes.	7.5 Dynamics and inclined planes - Solve dynamics problems on inclined planes. - Apply Newton's laws to connected systems. - Resolve forces and acceleration on slopes. 7.6 Connected particles - Model connected particle systems. - Apply Newton's second law to connected particles. - Solve problems involving tension and acceleration. 7.1 Static particles - Understand equilibrium of static particles. - Resolve forces in equilibrium problems. - Use force diagrams accurately. 7.2 Modelling with statics - Apply statics models to real-life situations. - Interpret assumptions used in modelling. - Solve equilibrium problems in context. 7.3 Friction and static particles - Understand frictional forces in statics. - Use limiting equilibrium conditions. - Solve problems involving friction. 4.1 Moments - Understand and calculate moments. - Use the principle of moments. - Solve equilibrium problems involving moments. 4.2 Resultant moments - Calculate resultant moments. - Combine clockwise and anticlockwise moments. - Solve problems involving multiple forces. 4.3 Equilibrium - Understand conditions for equilibrium. - Apply equilibrium equations. - Solve problems involving balanced forces. 4.4 Centres of mass - Determine centres of mass for laminae and systems.	7.4 Static rigid bodies - Model rigid bodies in equilibrium. - Apply moments and equilibrium conditions. - Solve statics problems involving rigid bodies. 6.1 Horizontal projection - Model horizontal projectile motion. - Calculate displacement and time. - Use kinematics in projectile problems. 6.2 Horizontal and vertical components - Resolve projectile motion into components. - Calculate velocity and displacement components. - Use vector methods in projectile motion. 6.3 Projection at any angle - Model projectiles launched at angles. - Resolve velocities into horizontal and vertical components. - Solve projectile motion problems. 6.4 Projectile motion formulae - Apply projectile motion equations. - Determine range, height and time of flight. - Solve contextual projectile problems.	8.1 Vectors in kinematics - Use vectors to describe displacement, velocity and acceleration. - Solve kinematics problems using vector notation. - Interpret motion in two dimensions. 8.2 Vector methods with projectiles - Use vector methods to model projectile motion. - Resolve projectile motion using horizontal and vertical components. - Solve projectile problems using vector equations. 8.3 Variable acceleration in one dimension - Use calculus with displacement, velocity and acceleration. - Differentiate and integrate to solve variable acceleration problems. - Apply initial conditions to find constants. 8.4 Differentiating vectors - Differentiate vector functions. - Find velocity and acceleration from displacement vectors. - Interpret vector derivatives in context. 8.5 Integrating vectors - Integrate vector functions. - Find velocity and displacement from acceleration vectors. - Use initial conditions in vector kinematics problems.		

		1.3 Hypothesis testing for zero correlation - Carry out hypothesis tests for correlation. - State null and alternative hypotheses correctly. - Use critical values for PMCC tests. - Interpret results in context. 3.1 The normal distribution - Understand the properties of the normal distribution. - Use notation for normal distributions. - Interpret normal distribution curves. 3.2 Finding probabilities for normal distributions - Calculate probabilities using the normal distribution. - Use standardisation techniques. - Interpret probabilities in context. 3.3 The inverse normal distribution function - Use inverse normal functions to find values. - Determine percentiles and critical values. - Interpret inverse normal calculations.		- Use symmetry in centre of mass problems. - Solve equilibrium problems involving centres of mass. 4.5 Tilting - Understand conditions for tilting. - Determine when objects will topple. - Apply moments in tilting problems.				
	Prior Knowledge	GCSE Prior Links 11.01 – Basic probability and experiments 11.02 – Combined events and probability diagrams 12.01 – Sampling 12.02 – Interpreting and representing data 12.03 – Analysing data 5.03 – Growth and decay 6.01 – Algebraic expressions 6.02 – Formulae and functions Year 12 Pure Prior Links - Algebraic manipulation - Exponentials and logarithms - Functions and graphs - Transformations - Differentiation Year 12 Statistics Prior Links - Sampling - Data presentation - Statistical distributions - Probability - Binomial distribution - Hypothesis testing	GCSE Prior Links 5.02 – Direct and inverse proportion 6.02 – Formulae and functions 6.03 – Algebraic equations 8.03 – Angle facts 10.05 – Triangle mensuration Year 12 Pure Prior Links - Trigonometric identities - Algebraic modelling - Parametric equations - Differentiation Year 12 Statistics Prior Links - Mathematical modelling - Interpretation of assumptions Year 12 Mechanics Prior Links - Forces and equilibrium - Newton’s laws - Connected particles - Kinematics - Variable acceleration - Resolving forces - Projectiles	GCSE Prior Links 1.01 – Calculations with integers 5.02 – Direct and inverse proportion 6.02 – Formulae and functions 6.03 – Algebraic equations 8.03 – Angle facts 10.03 – Area calculations 10.05 – Triangle mensuration Year 12 Pure Prior Links - Trigonometry - Algebraic manipulation - Parametric equations - Differentiation - Integration Year 12 Statistics Prior Links - Interpretation of data - Modelling assumptions Year 12 Mechanics Prior Links - Moments - Forces and equilibrium - Newton’s laws - Kinematics equations - Projectiles	GCSE Prior Links 1.01 – Calculations with integers 5.02 – Direct and inverse proportion 6.02 – Formulae and functions 6.03 – Algebraic equations 8.03 – Angle facts 10.03 – Area calculations 10.05 – Triangle mensuration Year 12 Pure Prior Links - Trigonometry - Algebraic manipulation - Parametric equations - Differentiation - Integration Year 12 Statistics Prior Links - Interpretation of data - Modelling assumptions Year 12 Mechanics Prior Links - Moments - Forces and equilibrium - Newton’s laws - Kinematics equations	GCSE Prior Links 1.01 – Calculations with integers 2.01 – Fractions 5.02 – Direct and inverse proportion 6.02 – Formulae and functions 6.03 – Algebraic equations 7.01 – Graphs of equations and functions 10.05 – Triangle mensuration Year 12 Pure Prior Links - Differentiation - Integration - Parametric equations - Functions and graphs - Algebraic modelling Year 12 Statistics Prior Links - Mathematical modelling - Interpretation of results Year 12 Mechanics Prior Links - Kinematics - Variable acceleration - Projectiles - Vectors		

		- Correlation and regression Year 12 Mechanics Prior Links - Mathematical modelling - Interpretation of assumptions		Variable acceleration	- Projectiles - Variable acceleration	- Newton's laws - Forces and motion		
	Future links	Year 13 Pure Future Links - Numerical methods - Differential equations - Sequences and series Year 13 Statistics Future Links - Hypothesis testing with normal distributions - Statistical modelling - Large data set interpretation Year 13 Mechanics Future Links - Modelling assumptions - Variable acceleration - Further kinematics Further Mathematics Future Links - Chi-squared distributions - Poisson distribution - Geometric distribution - Statistical hypothesis testing	Year 13 Pure Future Links - Integration - Differential equations - Parametric modelling Year 13 Statistics Future Links - Mathematical modelling - Interpretation of assumptions Year 13 Mechanics Future Links - Moments - Static rigid bodies - Projectiles - Further kinematics Further Mathematics Future Links - Further mechanics - Elastic collisions - Circular motion - Differential equations in mechanics	Year 13 Pure Future Links - Integration techniques - Differential equations - Numerical integration Year 13 Statistics Future Links - Statistical modelling - Interpretation of results Year 13 Mechanics Future Links - Static rigid bodies - Equilibrium problems - Further kinematics Further Mathematics Future Links - Further moments - Centres of mass - Work, energy and power - Further statics	Year 13 Pure Future Links - Parametric equations - Integration - Differential equations Year 13 Statistics Future Links - Modelling and interpretation Year 13 Mechanics Future Links - Further kinematics - Variable acceleration - Vector methods Further Mathematics Future Links - Vector mechanics - Oblique collisions - Circular motion - Differential equations in motion	Year 13 Pure Future Links - Differential equations - Numerical methods - Modelling with calculus Year 13 Statistics Future Links - Statistical modelling - Hypothesis testing Year 13 Mechanics Future Links - Vector motion - Variable acceleration - Projectiles Further Mathematics Future Links - Vector calculus - Further differential equations - Further kinematics - Advanced mechanics modelling		
	Assessment	End of unit assessed homework	- End of unit assessed homework - Grade Indicator 1	End of unit assessed homework	- End of unit assessed homework - Grade Indicator 2	A Level Exams	A Level Exams	