Curriculum Sequencing Overview – Maths Year 9

Week	1	2	3	4	5	6	7
Big ideas (key concepts)	1a. Sequences			1b. Number Properties			
Lesson topics sequence	Finding the next term of an arithmetic sequence Term to term rules and recurrence relations Recognise common sequences Nth term of an arithmetic sequence	Is a given value part of a given sequence (Using the nth term formula)? Special non-arithmetic sequences Continue a quadratic sequence and generate terms of a quadratic sequence, given the nth term	Continue a geometric progression and find the term to term rule	Use divisibility rules to help find factors. Understand the link between factors of a number and dimensions of rectangles with that area	Understand and know prime numbers up to 100. Reasoning and problem solving with prime numbers. Can represent a given number as a product of its prime factors	Find the highest common factor and lowest common multiple by listing Find the square, cube, square roots and cube roots of numbers. Solve problems involving cubes and link to volume.	Understand and calculate with indices greater than 3 Calculate with negative integers and understand the term reciprocal. Identify sets of numbers that form Pythagorean triplets
Lesson topics sequence (Challenge)		*Find nth term of quadratic sequence*	Recognise and use simple geometric progressions (rn where n is an integer, and r is a rational number > 0 or a surd) Find nth term of geometric progression			Find HCF and LCM using Venn diagrams Solve problems involving HCF and LCM	

Key assessments	1a – Sequences (Higher/Foundation)	Sequences KA			1b – Number properties (Higher/Foundation)	Number proerties KA	
Revision	Sparx task Self-quizzing: Sequences 1-6)	Sparx task Self-quizzing: Sequence 7-10	Sparx task Self-quizzing: Sequences 11-15	Sparx task Self-quizzing: Number properties 5-7	Sparx task Self-quizzing (core): Factors, multiples and primes 1-5	Sparx task Self-quizzing: Factors, multiples and primes 6-8	Sparx task Self-quizzing: Number properties 1-4

Week	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Big ideas (key concepts)	2a. Fractions			2b. Probability			
Lesson topics sequence	Express a terminating decimal as a fraction. Express a fraction as a decimal using division (terminating and recurring). Express one amount as a fraction of another. Finding a fraction of an amount Simplifying fractions	Convert between mixed number and improper fractions. Addition of fractions • equal denominators, including answers greater than a whole. • multiplying 1 fraction to find an equivalent denominator.	Multiplication • of a number and a fraction • of two fractions • of mixed numbers. Division of two fractions. Identifying which is the larger of two fractions. Interpret and compare a set of given fractions.	Describe the probability of an event in words and as a number. Mark events on a probability scale 0 – 1. Calculate expectation based on probability values. Find the probability of an event including outcomes	List all outcomes of an event systematically. Use and draw sample space diagrams. Identify mutually exclusive outcomes and know the sum of those probabilities is 1. Calculate a relative frequency.	Complete two way tables and frequency trees to calculate probabilities Use a Venn diagram to sort overlapping events (not mutually exclusive) Use set notation. Use union and intersection notation.	Find a missing probability from a list or table including algebraic terms. Use a probability tree diagrams to work out probabilities. Use the product rule for counting. Calculate estimated populations

		• multiplying both fractions to find an equivalent denominator. • mixed numbers and improper fractions. Subtraction of fractions.	Can use <, ≤, >, ≥, =, ≠ Ordering fractions Find the reciprocal of an integer, decimal or fraction.	using dice, spinners, coins	Calculate using the 'And', 'Or' and 'Not' rules of probability.	Calculate probabilities from Venn diagrams.	using capture, recapture.
Lesson topics sequence (Challenge)			Convert recurring decimals into fractions algebraically. Four operations with algebraic fractions.			Use a Venn diagram to calculate conditional probability. Capture – recapture	Use the product rule for counting. Compare relative frequencies from samples of different sizes (capture, recapture)
Key assessments	2a - Fractions (higher/Foundation)	Fractions KA		2b – probability (Foundation/Higher)	Probability KA		
Revision	Sparx task Self-quizzing: Fractions - 1-6	Sparx task Self-quizzing: Fractions - 7-12	Sparx task Self-quizzing: Fractions - 13-18	Sparx task Self-quizzing: Probability 1 – 1-6	Sparx task Self-quizzing: Probability 1 – 7-12	Sparx task Self-quizzing: Probability 2 – 3-8	Sparx task Self-quizzing: Probability 1 13-17

Week	15	16	17	18	19	20
Big ideas (key concepts)	3a. Arithmetic			3b. Indices and Standard Form		
Lesson topics sequence	Recognise and convert between metric measures of length and mass. Convert between metric measures of mass. Use and understand scale drawings. Addition with decimal numbers. Same number of decimal places, then different number of decimal places, including adding integers to decimals.	Using number bonds to subtract numbers mentally. Column subtraction (no borrowing), first with integers moving to decimals. Multiplication and Division Inequalities and number lines Using inequality notation to identify the size of decimals. Ordering fractions, decimals, and percentages	Interpret and order a list of fractions and decimals. Confidently convert between the two Ordering fractions, decimals and negatives. Further work with fractions, decimals and negatives. Find a decimal, fraction or negatives which lies between two others.	Index laws: • If the two terms have the same base and are to be multiplied together their indices are added. • If the two terms have the same base and are to be divided their indices are subtracted. • If a term with a power is itself raised to a power, then the powers are multiplied together. • n to the power of 0 • 1 to the power of n n to the power of 1	Writing a number in standard form Changing from standard form to an ordinary number	Multiply and divide in standard form Standard form on a calculator

Lesson topics sequence (Challenge)				1 to the power of n n to the power of 1 Fractional indices Negative indices	Multiply and divide in standard form. Standard form on a calculator Add or subtract in standard form	Surd notation Simplifying surds Rationalising the denominator
Key assessments	3a – Arithmetic (higher/Foundation)	Arithmetic KA	Mid-year assessment	3b – Indices and standard form (Higher/Foundation)	Indices and standard form KA	
Revision	Sparx Maths Task Self-Quizzing Arithmetic 1 - 6	Sparx Maths Task Self-Quizzing Arithmetic 7 - 11	Sparx Maths Task Self-Quizzing Arithmetic 12 - 16	Sparx Maths Task Self-Quizzing Indices and Standard Form 1 – 3	Sparx Maths Task Self-Quizzing Indices and Standard Form 4 – 6	Sparx Maths Task Self-Quizzing Indices and Standard Form 7 – 9

Week	21	22	23	24	25	26
Big ideas (key concepts)	4a. Collecting and displaying data			4b. Algebraic Manipulation		
Lesson topics sequence	Use suitable data collection techniques. Write questions to eliminate bias, and understand how the timing and location of a survey can ensure a sample is representative Understand what is meant by a sample and a population. Understand the use of a sample and the different types that can be taken. Understand how different sample sizes may affect the reliability of conclusions drawn. Design a data collection sheet for grouped discrete and continuous data, use inequalities for grouped data	Collate data into frequency tables and read values from frequency tables. Interpreting diagrams that display data Draw and interpret pictograms. Draw and interpret composite bar charts. Draw and interpret dual bar charts. Draw and interpret pie charts. Draw and interpret line graphs. Draw and interpret stem and leaf diagrams.	Draw and interpret frequency polygons. Draw and interpret two-way tables. Interpret information from timetables (two way) – plan journeys. Draw and interpret scatter graphs. Identify outliers, line of best fit. Use line of best fit to make predictions, understand interpolate and extrapolate and the dangers of doing so. Distinguish the types of correlation. Understand correlation doesn't imply causality. Construct tables and line graphs for time series	Understand the idea of an 'Identity' relationship. Identify an equation, formula, identity, or expression and understand the differences. Select an expression/equation/formula/identity from a list. Use notation and symbols correctly and write expressions. Simplify an expression by collecting like terms. Expand and simplify expressions involving single brackets.	Simplify algebraic expressions by collecting like terms and by multiplying and cancelling using index laws. Factorise simple expressions into single brackets. Fully factorise a more complex expressions into a single bracket	Expand and simplify expressions involving double brackets. Factorise quadratic expression including DOTS. Substitute into expressions to find their value. Form expressions and derive a simple formula. Substitute numbers into a formula.

Lesson topics sequence (Challenge)	To be able to complete a stratified sample. Compare relative frequencies from samples of different sizes (capture, recapture)	Know the appropriate uses of cumulative frequency diagrams. Construct and interpret cumulative frequency tables. Construct and interpret cumulative frequency graphs/diagrams. Compare the mean and range of two distributions, or median and interquartile range. Interpret box plots to find median, quartiles, range and interquartile range and draw conclusions. Produce box plots from raw data and when given quartiles, median and identify any outliers	Know the appropriate uses of histograms. Construct and interpret histograms from class intervals with unequal width. Use and understand frequency density. From histograms: complete a grouped frequency table. Estimate the mean from a histogram. Estimate the median from a histogram with unequal class widths or any other information from a histogram, such as the number of people in each interval.	Expand and simplify expressions involving triple brackets.	Add and subtract algebraic fractions Multiply and divide algebraic fractions	Factorise quadratic expression with co-efficient of $x > 1$ Change subject of a formula Proof Functions
Key assessments	4a – Collecting and displaying data (Higher/Foundations)	Types of data KA		4b – Algebraic Manipulation (Higher/Foundation)	Algebra KA	

Revision	Sparx Maths Task Self-Quizzing: Types of data – 1-6	Sparx Maths Task Self-Quizzing: Types of data 6-11	Sparx Maths Task Self-Quizzing: Averages and range 1-4	Sparx Maths Task Self-Quizzing: Algebra: the basics 1-6	Sparx Maths Task Self-Quizzing: Algebra: the basics 7-12	Sparx Maths Task Self-Quizzing: Expanding and factorising – 1-5

Week	**27**	**28**	**29**	**30**	**31**	**32**
Big ideas (key concepts)	5a. Percentages			5b. Solving Equations and Inequalities		
Lesson topics sequence	Convert between fractions decimals and percentages. Equivalence of fractions, decimals and percentages Order a mixed list of fractions decimals and percentages. Express a decimal >1 as a percentage Express one amount as a percentage of another.	Find a percentage of an amount with and without a calculator. Using a multiplier Calculate percentage increase or decrease. Express a change as a percentage. Calculate profit or loss.	Calculate simple interest. Calculate using repeated percentage change. Calculate compound interest.	Solve linear equations including, one step, two step, variables on both sides, equations with brackets. Form and solve linear equations.	Rearrange equations, including those with powers and roots. Write simultaneous equations to represent a situation. Solve two linear simultaneous equations algebraically.	Understand inequality notation and represent inequalities on a number line. Write values that satisfy an inequality.

Lesson topics sequence (Challenge)			Solve reverse percentage problems.	Solve quadratic equations: • Factorising • Completing the square • Quadratic formula That need rearranging	Set up and solve quadratic equations and those arising from algebraic fractions	Interpret the solution. Solve quadratic inequalities. Use iteration
Key assessments	5a. Percentages (Higher/Foundation)	Percentages KA		5b. Solving Equations and Inequalities (Higher/Foundation)	Equations KA	
Revision	Sparx Maths Task Self-Quizzing: Expanding and factorising 6-9	Sparx Maths Task Self-Quizzing: Percentages 3-9	Sparx Maths Task Self-Quizzing: Percentages 10-12	Sparx Maths Task Self-Quizzing: Setting up, rearranging and solving equations 1-6	Sparx Maths Task Self-Quizzing: (Core): Simultaneous equations 1-4. (Challenge): Quadratic equations 1-5	Sparx Maths Task Self-Quizzing: Inequalities 1-6

Week	33	34	35	36	37	38	39
Big ideas (key concepts)	6a. Properties of 2D shapes and co-ordinates				6b. Angles		
Lesson topics sequence	Units of measure. Understanding parallel and perpendicular lines. Reflections and lines of symmetry. Rotation and order of symmetry. Properties of shapes. Properties of regular shapes.	Identify all key parts of a circle. Use geometric language and use of letters to identify points (two letter notation for line and 3 letter for angles). Know the properties of quadrilaterals and triangles.	Plotting and reading co-ordinates Using co-ordinates to find missing corners of rectangles/triangle etc.	Translation, rotation and reflection Understand clockwise and anti-clockwise. Reflections on a co-ordinate grid Vertical and horizontal lines on a co-ordinate grid.	Angles around a point Angles on a line Angles in a triangle Angles and algebra	Interior/exterior angles in regular polygons Sum of angles in irregular polygons	Identifying parallel lines Corresponding angles Alternate angles Co-interior angles Vertically opposite Problem solving
Lesson topics sequence (Challenge)							Form equations to solve interior and exterior angle problems
Key assessments	6a. Properties of 2D shapes (Higher/Foundation)	Properties of 2D shapes KA	Transformations KA		6b. Angles (Higher/Foundation)	End of year assessment	
Revision	Sparx Maths Task Self-Quizzing: Properties of 2D shapes 1-5	Sparx Maths Task Self-Quizzing: Properties of 2D shapes 6-10	Sparx Maths Task Self-Quizzing: Co-ordinates 11-5	Sparx Maths Task Self-Quizzing: Transformations 1-7	Sparx Maths Task Self-Quizzing: Transformations 8-14	Sparx Maths Task Self-Quizzing: Angles 1-7	Sparx Maths Task Self-Quizzing: Angles 8-13