Mathematics Narrative

"Beauty is the first test; there is no permanent place in the world for ugly mathematics." G.H.Hardy)

We chose to begin with algebraic notation in year 7 instead of sequences in the White Rose Curriculum as we believe algebra underpins everything we do in Maths. The next topic (equality and equivalence) ties in nicely as it uses the algebraic notation just learned to begin to solve equations, followed by Sequences, linking the multiplicative relationship between numbers in some non-linear sequences, additive relationships between linear sequences and then considering the abstract sequences that f ollow neither of these rules, interleaving us back to multiplicative relationships that we taught just before the break. More advanced classes began to consider sequences as an algebraic relationship, being able to link 5,9,13, 17, to the algebraic rule 4n+1 etc.

Place value, which often comes first in many year 7 Curriculum builds on the idea of sequencing to allow us to properly order numbers, either by being able to place the correct inequality between two numbers to identify the largest (which also leads us back to the algebraic notation which permeates the Curriculum) and then follow a sequence to order integers, directed numbers and decimals. Once the idea of a decimal being the description of a number which is not an integer and may be the result of one number being divided by another, we can introduce the concept of a fraction. We will spend the remainder of this term learning to convert decimals to and from fractions (and percentages) and begin to calculate with fractions using the four operations.

After Christmas we touch on finding fractions of amounts to link the fractional relationship between two numbers into a more practical numerical value solution before moving on to solving problems with addition and subtraction and then solving problems with multiplication and division as the algebra is either inherent or implicit in the problems posed, trading the more abstract algebra that they'd been concentrating on for the previous term with a more practical 'doing' type of Mathematics, however the algebra is interwoven in.

We then combine the notion of having a firm numerical solution to a problem with the pure algebra learnt in the first term to solve one and then multistep equations and introducing the concept of directed numbers within. The process of following algebraic rules to solve an equation and the understanding and memorisation of the steps required links us then to reapply this to the combination of fractions using all four operations.

Following the Easter break will focus more on Geometric reasoning where we begin by bringing back the ideas of geometric notation that we learned all the way back in Autumn. Once the grammar of the topic has been taught (180 on a straight line, 360 around a point etc) we can begin solving problems where the unknowns are always described algebraically, ensuring that the algebraic notation stays present throughout every topic. Students in classes who progress more quickly will be able to interleave constructions with their

discovery of angles in parallel lines and angles in polygons, being able to accurately see the angles they are working out using both the measurement skills they learnt earlier and the algebraic calculation of angles. We then move on to number sense where students will revisit more basic skills to hone their abilities and allow teachers to diagnose and solve common misconceptions and gaps in those vital skills. Finally, year 7 will finish considering prime numbers and proofs, exploring more abstract concepts, again algebraically, and being empowered to access the more scholarly side of Mathematics.

Fractions	Use common factors to simplify fractions; use common multiples to express fractions with the same denominator. Convert between mixed numbers and improper fractions. Compare and order fractions. Add and subtract fractions.	Sparx Maths Clip: M335 Sparx Maths Clip: M939 Sparx Maths Clip: M601 Sparx Maths Clip: M835 Sparx Maths Clip: M931 Sparx Maths Clip: M645
Number	Long multiplication of up to 4 digit numbers by 1 or 2 digit numbers. Short division, up to 4 digits by 1 digit and 2 digit numbers (including remainders). Multiply and divide numbers by 10, 100 and 1000. Add and subtract with negative numbers. Multiply and divide with negative numbers.	Sparx Maths Clip: M187 Sparx Maths Clip: M354 Sparx Maths Clip: M113 Sparx Maths Clip: M106 Sparx Maths Clip: M288
Decimals	Read and write decimal numbers as fractions. Convert percentages to fractions and decimals. Multiply any decimals by one or two digit numbers. Multiply two decimal numbers. Divide decimals by whole numbers.	Sparx Maths Clip: M958 Sparx Maths Clip: M264 Sparx Maths Clip: M553 Sparx Maths Clip: M803
Percentages	Know that percentage means "out of 100". Write percentages as fractions. Convert percentages to fractions and decimals. Finding percentages of amounts – non-calculator methods. Percentages: Write one value as a percentage of another. Find the percentage change to a value.	Sparx Maths Clip: M695 Sparx Maths Clip: M684 Sparx Maths Clip: M437 Sparx Maths Clip: M905 Sparx Maths Clip: M476
Rounding Numbers	Round numbers with two decimal places to a whole number, nearest 10, 100 and 1000. Round numbers (1) and measures to any number of significant figures or decimal places.	Sparx Maths Clip: M431 Sparx Maths Clip: M994 Sparx Maths Clip: M131
BIDMAS	Use conventional notation for the order of operations (BIDMAS), including brackets and powers.	Sparx Maths Clip: M521
Statistical Diagrams	Draw and interpret bar charts, pictograms and line graphs. Interpret bar charts, pictograms and line graphs and use them to solve problems. Draw and interpret pie charts.	Sparx Maths Clip: M460 Sparx Maths Clip: M597 Sparx Maths Clip: M574
Averages	Finding the averages and range of small sets of data. Using the averages and the range to compare small sets of data. For non-grouped data given in the form of a table, find the mean, median, mode and range.	Sparx Maths Clip: M328 Sparx Maths Clip: M934 Sparx Maths Clip: M841 Sparx Maths Clip: M940
Angles	Estimate and compare acute, obtuse and reflex angles. Draw given angles and measure them in degrees. Derive and use the sum of angles in a triangle and quadrilateral. Apply the properties of angles at a point on a straight line and vertically opposite angles.	Sparx Maths Clip: M541 Sparx Maths Clip: M780 Sparx Maths Clip: M818 Sparx Maths Clip: M351 Sparx Maths Clip: M163
Area	Calculate and solve problems involving the area of squares, rectangles and parallelograms. Calculate and solve problems involving the area of triangles.	Sparx Maths Clip: M390 Sparx Maths Clip: M269 Sparx Maths Clip: M610
Volume	Derive and apply formulae to calculate the volume of cuboids; solve problems involving cubes and cuboids.	Sparx Maths Clip: M765
Indices/ Powers	Recognise and use square and cube notation. Know when calculations that involve powers can be simplified.	Sparx Maths Clip: M135 Sparx Maths Clip: M608
Algebra	Write expressions in words and vice versa. Use, simplify and interpret algebraic notation. Substitute numbers into formulae, equations and expressions, including scientific	Sparx Maths Clip: M813 Sparx Maths Clip: M417 Sparx Maths Clip: M327 Sparx Maths Clip: M795

	formulae. Simplify and manipulate algebraic expressions by collecting like terms. Expand with single brackets.	Sparx Maths Clip: M237
Linear Equations	Use algebraic methods to solve linear equations in one variable. Use algebraic methods to solve linear equations in one variable.	Sparx Maths Clip: M707 Sparx Maths Clip: M634 Sparx Maths Clip: M647
Substituting Numbers	Substitute numbers into formulae, equations and expressions, including scientific formulae.	Sparx Maths Clip: M979 Sparx Maths Clip: M327
Measures	Change freely between related standard units (for example time, length, area, volume/capacity and mass)	Sparx Maths Clip: M772 Sparx Maths Clip: M728
Solving Problems	Use unit pricing to solve problems (e.g. 3 apples cost £1.80, how much do 5 apples cost? Find the price of 1 apple first).	Sparx Maths Clip: M901 Sparx Maths Clip: M681
Linear Graphs	Complete a table of values for a function and use it to draw linear graphs.	Sparx Maths Clip: M932