Year 8 Sequencing

Autumn	Content	Rationale	Links to Cultural Capital
Proportional Reasoning	**Ratio and Scale** • Understand ratio and its link to multiplication • Use ratio notation • Reduce ratios to simplest form • Solve ratio problems • Calculate the circumference of a circle	• A key foundation to many of the other topics taught this year • Ratio is a problematic topic for our students so a strong understanding developed early can be built upon and linked to	• Problem solving skills • Decision making
	Multiplicative Change • Use scale factors, linking to ratio, to solve simple direct proportion problems • Convert between currencies, including using graphs • Draw and interpret scale diagrams and maps	• Natural progression from previous topic and allows connections to be made between ratio and proportion	• Currency conversion in different countries and exchange rates • Reading and interpreting a map
	Multiplying and dividing fractions • Multiply and divide a fraction by an integer • Multiply and divide a fraction by a fraction • Understand and use the reciprocal	• Similar representations covered in ratio • Builds on prior learning in year 7 on equivalence and multiplying and dividing	• Fluency with number • Decision making
Representation	**Woking in the Cartesian plane** • Plot and interpret straight line graphs • Understand ad use the equations of a straight line, including lines parallel to the axes • Make links between direct proportion and straight lines of the form $y = kx$ • Model situations by translating them into expressions, formulae and graphs	• Direct proportion discussed with reference to currency. Explored more explicitly here with links to algebra and the equation of a line. • Preparation for work with algebra in the spring term	• Problem solving skills • Decision making
	Representing data • Draw and interpret scatter graphs • Understand correlation • Draw and use lines of best fit • Understand grouped and ungrouped ,discrete and continuous data • Design and use one and two-way tables	• Develop understanding of gradient discussed in the cartesian plane. • In Year 7 the terms linear and non-linear were discussed. This links to sequences. • Non-linear line of best fit links to drawing non-linear graphs (higher)	• Pattern spotting, logical skills and efficiency. • Data collection used for statistical analysis. • Conduct experiments, make observations and draw conclusions

Probability • List outcomes using sample space diagrams for one and two events • Find probabilities using tables and Venn diagrams	• Follows on from designing and drawing tables in representing data, finding and interpreting outcomes. • Application of fractions covered previously • Building on from Year 7 work with sets and probability with single events	• Mathematical reasoning • Calculating risk

Spring		Content	Rationale	Cultural Capital
Algebraic Techniques		**Brackets, equations and inequalities** • Expand, and factorise into, single brackets • Form and use expressions, formulae and identities • Form and solve equations and inequalities with and without brackets • Distinguish between equations, expressions, formulae and identities	• Develop ideas from Year 7 on expanding brackets and solving equations. • Provides the foundations for upcoming topics.	• Use and application of formulae • Understanding processes
		Sequences • Generate sequences using more complex rules, e.g. with brackets and squared terms, both in words and algebraically	• Earlier work when plotting graphs is developed using tables and patterns. • Previous topic involving algebra is summarised. • Pupils are more familiar with a wider range of notations hence the position here within other algebra topics	• Pattern spotting •
		Indices • Form expressions using indices • Understand and use the addition and subtraction rules	• Exploring previous notations in greater depth, incorporating powers • Fractions	
Developing Number		**Fractions and percentages** • Develop understanding of fractions, decimals and percentages • Evaluate percentage increases and decreases • Use multipliers to solve percentage problems • Express one number as a percentage of another		
		Standard index form • Convert between numbers in ordinary and standard form • Compare numbers given in standard form • Calculate with numbers given in standard form, with and without a calculator		
		Number sense • Develop mental strategies • Convert between metric measures and units • Estimation, including rounding to a given number of decimal places • Use the order of operations		

Summer	Content	Rationale	Cultural Capital
Developing Geometry	**Angles in parallel lines and polygons** • Review Y7 angles rules • Understand and use parallel lines and angles • Revisit geometric notation • Work out angles in special quadrilaterals • Find and use the sum of interior and exterior angles of a polygon • Prove simple geometric facts		
	Area of a trapezia and circles • Review area of shapes covered in year 7 • Calculate the area of a trapezium • Calculate the area of a circle, and the area of parts of a circle • Use significant figures • Calculate the area of compound shapes		
	Line symmetry and reflection • Recognise line symmetry in polygons and other shapes • Reflect shapes in horizontal, vertical and diagonal lines		
Reasoning with data	**The data handling cycle** • Understand and use primary and secondary sources of data • Collect data, including using questionnaires • Interpret and construct statistical diagrams, including multiple bar charts • Construct and interpret pie charts • Compare distributions using charts • Identify misleading graphs		
	Measures of location and dispersion • Revisit the median and mean, including finding the total given the mean • Find the mean of grouped data • Work out the mode and modal class • Choose the appropriate average • Comparing distributions using measures		