

CURRICULUM PLAN



SUBJECT:	Maths (KS3)	YEAR GROUP:	8
SUBJECT INTENT:	In Year 8 students will continue to deepen their understanding of topics taught in Year 7 and at primary school. For example, their work on algebraic expressions will be extended to include index laws, expanding double brackets and algebraic fractions. Students will also further their understanding of percentages by learning methods involving decimal multipliers, and continue to work with the fundamental concepts of ratio and proportion that were first introduced at primary school. In Year 8 students will also extend their knowledge of number systems, meeting their first irrational number: π . Calculator use will feature heavily throughout the year.		

TERM	TOPIC	CORE LEARNING	SEQUENCING
Autumn 1	Percentages	- Finding percentages of amounts without a calculator (M437) - Finding percentages of amounts with a calculator (M905) - Percentage in/decreases with and without a calculator (M476, M533) - Problem solving with percentages	<i>Building on...</i> Work on percentages from KS2. Converting between F.D.P and fraction of amounts in Y7. <i>Building towards...</i> Reverse percentages, percentage change and simple interest in Y9. Compound percentage in KS4.
	Money	Value for money (M681)	<i>Building on...</i> Calculations with integers and decimals, and basic proportion questions from KS2 and Y7. Use of percentage in/decrease from prior unit. <i>Building towards...</i> Direct proportion problems involving exchange rates, best buys. This unit spans across KS3/4 and often appears as contextual questions combining fractions, decimals, percentages and ratios.
	Indices	- Index rules with positive indices (M608) - Index rules with negative indices (M150) - Simplifying expressions using index laws (M120) - Simplifying algebraic fractions by cancelling common factors (M568)	<i>Building on...</i> Calculating with roots and powers in Y7, simplifying numerical fractions, understanding algebraic notation. <i>Building towards...</i> Standard form in Y8 Spring term and also working with surds and more complex indices at KS4.
	Equations	- Solving equations of the form $(x+a)/b=c$ (M401) - Solving linear equations involving brackets (M902) - Solving equations with the unknown in the denominator (M387) - Solving equations with the unknown on both sides (M554) - Constructing and solving equations (M957)	<i>Building on...</i> Solving one and two step equations, expanding brackets covered in Y7. <i>Building towards...</i> This unit covers fundamental skills that are needed for many other topics throughout KS3/4. Students will need to be able to solve equations of all different types and in various contexts. Solving linear equations leads onto factorising and solving monic quadratic equations in Y9.

Autumn 2	Sequences	• Term-to-term rules for numerical sequences, including arithmetic and geometric sequences (M381) • Term-to-term rules for sequences of patterns (M241) • Substituting into position-to-term rules (M166) • Position-to-term rules for arithmetic sequences (M991) • Position-to-term rules for sequences of patterns (M866) • Explore Fibonacci-type sequences	<i>Building on...</i> Patterns and sequences introduced at KS2, also algebraic expressions and substitution taught in Y7. Students will also work with sequences involving fractions, decimals and negative numbers, thus will be working fluently with these types of numbers. <i>Building towards...</i> Nth term of a quadratic sequence at KS4 and substitution into linear equations for tables of values and plotting lines in Summer term Y8.
	Ratio	• Writing and simplifying ratios (M885) • Writing ratios in the form 1:n (M543) • Converting between ratios, fractions, percentages (M267) • Using equivalent ratios to find unknown amounts (M801) • Sharing amounts in a given ratio (M525) • Drawing and interpreting scale diagrams (M112)	<i>Building on...</i> Solving problems that involve unequal sharing and grouping using knowledge of fractions and multiples at KS2. Factors and multiples in and simple proportion taught also in Y7. <i>Building towards...</i> Direct and inverse proportion unit in Y9. Application of ratios to geometrical, statistical and multi-step problems in KS4.
Spring 1	Rounding and estimation	• Rounding integers using significant figures (M994) • Rounding decimals using significant figures (M131) • Estimating calculations (M878)	<i>Building on...</i> Understanding of place value, rounding decimals and integers in KS2. <i>Building towards...</i> Error intervals and truncating decimals in Y9.
	Coordinates	• Calculating midpoints (M622) • Mixed problems: Coordinates and midpoints (M311)	<i>Building on...</i> Reading and plotting coordinates in Y7. <i>Building towards...</i> Plotting and finding the equations of linear graphs in the summer term. In Y9 these skills will be used to plot and interpret quadratic graphs.
	Area	• Finding the area of parallelograms (M291) • Finding the area of trapeziums (M705) • Converting units of area (M728)	<i>Building on...</i> Calculating the area and perimeter of rectilinear shapes from KS2/Y7, as well as properties of quadrilaterals in Y7. <i>Building towards...</i> This builds towards units on surface area and volume next half term and in Y9. It will also build towards multi-step KS4 contextual problems.
	Circles	• Identifying parts of circles (M595) • Finding the circumference of circles (M169) • Finding the area of circles (M231)	<i>Building on...</i> Concepts of area and perimeter of 2D shapes as well as substitution skills built on from KS2/Y7. Consolidating rounding skills. <i>Building towards...</i> Further along in KS3/4, students will solve complex problems involving sectors, arcs and segments of circles. Volume and surface area of cylinders (Y9) as well as multi-step contextual problems in KS4.

	Standard form	- Using standard form with positive indices (M719) - Using standard form with negative indices (M678)	<i>Building on...</i> This unit revisits the concepts of place value, the four operations, powers and roots covered in Y7 and indices in Autumn term of Y8. <i>Building towards...</i> Calculations with standard form further in Y9 and KS4, as well as applications to Physics.
Spring 2	Venn diagrams	- Venn diagrams (M829) - Probabilities from Venn diagrams (M419) - Finding the HCF and LCM using prime factor decomposition (M365)	<i>Building on...</i> Basic probability of a single event and sample space diagrams in Y7. Identifying and listing factors, multiples and primes at KS2, with highest common factor and lowest common multiple covered in Y7. <i>Building towards...</i> Experimental probabilities and frequency trees in Y9 as well as more complex probability problems and set notation in KS4.
	3D shapes	- Properties of 3D shapes (M767) - Nets of 3D shapes (M518) - Finding the surface area from a net (M884) - Finding the surface area of cubes and cuboids (M534) - Finding the surface area of prisms (M661) - Finding the volume of cubes and cuboids (M765) - Finding the volume of prisms (M722) - Converting units of volume (M465)	<i>Building on...</i> Area and perimeter of 2D shapes including circles in Y7 and in Spring term Y8, as well as metric units in Y7 and powers of 10. This will also draw on previously taught skills of rounding and substitution. <i>Building towards...</i> Plans and elevations (Y9) and contextual problems in KS4. Also working with area and volume of similar shapes.
Summer 1	Linear graphs	- Plotting horizontal, vertical and diagonal lines (M797) - Plotting straight line graphs (M932) - Finding equations of straight line graphs (M544)	<i>Building on...</i> Plotting coordinates and substitution into expressions. <i>Building towards...</i> Further work on linear and non-linear graphs in Y9 and at KS4.
	Transforming shapes	- Translation (M139) - Reflection (M290)	<i>Building on...</i> Coordinates and linear graphs units earlier this year. <i>Building towards...</i> Transformations of shapes including rotation and enlargement, and more complex combined transformations in KS4. Also links to congruency in Y9.
	Angles	- Angles in quadrilaterals (M679) - Combining angle facts (M319) - Angles on parallel lines (M606) - Using quadrilateral properties to find angles (M393) - Angles in polygons (M653)	<i>Building on...</i> Basic angle facts from KS2 and revisited in Y7 as well as knowledge of 2D shapes. <i>Building towards...</i> Further exploration of angles and bearings in Y9. More complex problems and chains of reasoning leading to geometric proof in KS4.

	Statistical diagrams	● Drawing pie charts (M574) ● Interpreting pie charts (M165) ● Drawing line graphs (M140) ● Interpreting line graphs (M183) ● Drawing stem-and-leaf diagrams (M648) ● Interpreting stem-and-leaf diagrams (M210) ● Finding averages from diagrams (U854)	<i>Building on...</i> Interpreting and constructing pie charts is introduced in Y6. Averages and basic statistical graphs were previously taught in Y7. <i>Building towards...</i> These data representations will be used in different subjects also. Interpreting data and making conclusions in Y9 with more statistical diagrams. Leads into more complex statistical graphs in KS4 such as cumulative frequency graphs, histograms and box plots.
Summer 2	Inequalities	● Reading and drawing linear inequalities on number lines (M384) ● Solving single inequalities (M118)	<i>Building on...</i> Use of inequality signs and understanding of number lines at KS2. Solving linear equations skills taught previously in Y7/8. <i>Building towards...</i> Error intervals in KS4, as well as quadratic inequalities.
	Brackets	● Expanding double brackets (M960)	<i>Building on...</i> Simplifying expressions and expanding a single bracket in Y7. <i>Building towards...</i> Manipulating more complex algebraic expressions in Y9 including factorising monic quadratic equations and expanding triple brackets in KS4.
	Fraction review and Algebraic fractions	● Calculating with fractions (M645) ● Calculating with mixed numbers (M619) ● Simplifying algebraic fractions by factorising (M754) ● Adding and subtracting algebraic fractions (M336)	<i>Building on...</i> The fundamentals of fractions at KS2 as well as operations with fractions and mixed numbers covered in Y7. This unit also builds on the algebraic manipulation taught in Y7. <i>Building towards...</i> Operations with algebraic fractions at KS4. Students will also need a good understanding of fractions to answer problems across a number of topics throughout KS3/4, including ratio and probability.
	Recurring decimals	● Using recurring decimal notation (M701) ● Converting fractions to recurring decimals (M922)	<i>Building on...</i> Numeracy skills in KS2, the number line and Y7 including operations with decimals and division. <i>Building towards...</i> More complex recurring decimal questions in KS4 including calculations with recurring decimals.