Yardleys Curriculum Aims

- To achieve academic excellence
- To educate the 'whole child' so they are ready for life
- To work collaboratively and ethically to provide education of the highest standard

MATHS – KEY STAGE 3

Curriculum Overview			
INTENT: At Yardleys, we want our pupils to see Mathematics as a universal language that allows us conceptualise and communicate ideas clearly across the curriculum and beyond. Throughout our curriculum, we develop mathematicians that are empowered with the knowledge, attitude and strategies to reason, generalise and simplify complex problems into their composite parts. Our pupils are fluent in the key mathematical processes so that they may become flexible and creative problem solvers that are resilient when faced with challenges.			
Year 7			
Year 7 focuses almost exclusively on non-calculator work, ensuring solid foundations in numeracy, consolidating skills learned in KS2 and beginning the KS3 Maths journey introducing topics such as algebra and ratio.			
SUBSTANTIVE KNOWLEDGE	• Factors, multiples and primes • Operations with fractions • Perimeter with fractions and decimals • Percentages • Estimating and rounding • Addition, subtraction, multiplication and division – worded and multi-step questions • Coordinates, lines and reflections	• Statistics and charts • Multiplying and Dividing with Powers of 10 • Working with units of measure including time • Negative numbers • Order of Operations • Algebra Conventions and Collecting • Introducing ratio	• Algebra Substitution and Solving • Angles • Area • Sequences • Data handling cycle
DISCIPLINARY KNOWLEDGE	• **Develop fluency -** select and use appropriate calculation strategies • **Reason mathematically -** making connections between number relationships	• **Develop fluency -** use of algebra, move freely between different numerical, algebraic, and diagrammatic representations • **Reason mathematically -** ratio and proportion in working with measures and	• **Develop fluency -** select and use appropriate calculation strategies, analysis of 2-D shapes and statistics. • **Reason mathematically -** using geometrical constructions

	Solve problems - use of formal mathematical knowledge	geometry, and in formulating proportional relations algebraically, express relations between variables algebraically • **Solve problems -** model situations mathematically, express the results using a range of formal mathematical representations	• **Solve problems -** use of formal mathematical knowledge
Year 8			
Year 8 builds on the solid foundations of Year 7, while introducing the effective use of calculators and a greater emphasis on ratio/proportion, algebra and geometry.			
SUBSTANTIVE KNOWLEDGE	• Prime Factorisation • Probability • Calculating with Mixed Numbers • Working with decimals (inc significant figures and error bounds) • Ratio Calculations • Speed Calculating with percentages	• Negative numbers • Identities – expanding and factorising • Scale factor and enlargement • Problem solving with averages • Solving Equations w brackets and fractions • Circles • Area of trapezia and compound shapes	• Nets and Elevations • Volume of prisms • Angles and properties of triangles and quadrilaterals • Frequency tables • Linear sequences & graphs • Translations and column vectors
DISCIPLINARY KNOWLEDGE	• **Develop fluency -** work with powers, indices and roots. Perform all operations with fractions and negative numbers • **Reason mathematically -** use ratio tables to explore multiplicative relationships **Solve problems -** use Venn diagrams to solve problems with HCF and LCM	• **Develop fluency -** solve multi-step linear equations including with brackets • **Reason mathematically -** recognise the effect of changing values within data sets, appreciate scale and dimensions and the effect on area • **Solve problems -** model situations mathematically, use inverse operations in a variety of situations, “zoom” in and out of problems to break them down	• **Develop fluency -** recall a range of formulae and substitute into them with and without a calculator • **Reason mathematically -** Use the properties of shapes to work out their interior angles. Appreciate the link between sequences and graphs • **Solve problems -** model situations mathematically, use inverse operations in a variety of situations, “zoom” in and out of problems to break them down
Year 9			
Year 9 concludes KS3 by building on the work done in Years 7 and 8 to apply the methods learned to new contexts while introducing graphical representations and more advanced algebraic and geometric techniques.			
SUBSTANTIVE KNOWLEDGE	• Calculations with decimals including recurring decimals • Percentages and interest • Angles in parallel lines	• Linear graphs – finding equation of a line • Solving linear simultaneous equations • Proportion and best buy • Compound units	• Pythagoras’ theorem • Trigonometry • Bearings • Surface area

	• Indices, powers and roots • Standard form • Calculating and manipulating ratios • Solving and rearranging linear equations Transformations	• Identities and quadratics • Probability	• Averages from grouped data • Scatter graphs • Loci and constructions
DISCIPLINARY KNOWLEDGE	• **Develop fluency -** solve multi-step linear equations with unknowns on both sides • **Reason mathematically -** select appropriate techniques and operations to solve increasingly complex problems, for example in percentages • **Solve problems** – use multiple angle facts to solve multi-step geometrical problems	• **Develop fluency –** expand double brackets efficiently including special cases • **Reason mathematically –** understand the effect of changing one variable in relationships of direction proportion • **Solve problems -** use knowledge of gradient to find rates in a variety of contexts	• **Develop fluency** – find missing lengths and angles in right-angled triangles • **Reason mathematically** - understand the effect of changing one variable in frequency tables on averages and range • **Solve problems** – work backwards using inverse operations in a variety of contexts including geometry