Hanley Castle High School curriculum outline for parents**: Maths**

		Autumn Term		Spring Term		Summer Term	
Year 7	**Topic** **Big question / Overview**	**Numbers and the number system** *How are numbers connected?* Find factors, multiples and prime numbers; use highest common factors and lowest common multiples; recognise square, cube and triangular numbers; understand powers and roots. **Calculating** *How can we calculate accurately?* Use written methods for the four operations with whole numbers and decimals; work with powers of 10, metric conversions and the order of operations. **Measuring space** *How do we measure and draw accurately?* Choose appropriate units; read 12- and 24-hour clocks; measure line segments and angles; draw angles and construct shapes from descriptions.	**Checking, approximating and estimating** *How do we know an answer is reasonable?* Order and compare positive and negative numbers and decimals; use number lines and inequality symbols; round to decimal places or significant figures and estimate calculations. **Investigating properties of shapes** *What makes shapes alike or different?* Identify and use properties of triangles, quadrilaterals and 3D shapes; recognise parallel and perpendicular lines; interpret nets, faces, edges and vertices.	**Measuring data** *What can data tell us?* Ask questions about data, populations and samples; build and read frequency tables; calculate and compare mean, median, mode and range. **Exploring fractions, decimals and percentages** *How can the same value be represented?* Use fraction models; find equivalent and simplified fractions; convert mixed and improper fractions; connect fractions and decimals, including terminating and recurring decimals; compare and order fractions. **Proportional reasoning** *How can ratios help us compare quantities?* Write and simplify ratios; share amounts in a ratio; use ratio tables, multipliers and direct proportion; solve practical problems involving recipes, mixtures and unit prices.	**Exploring fractions, decimals and percentages** *How are percentages useful?* Understand percentages as parts of a hundred; convert between percentages, fractions and decimals; calculate percentages of amounts and simple percentage increases and decreases. **Calculating** *How do negative numbers behave?* Use negative numbers in contexts such as temperature; locate them on number lines; add and subtract across zero and calculate with positive and negative numbers.	**Algebraic proficiency: tinkering** *How can letters describe number rules?* Use symbols for missing values; explore function machines; write algebraic expressions, understand algebraic notation and collect like terms. **Calculating** *What happens when we multiply and divide negative numbers?* Multiply and divide with positive and negative numbers; use a calculator accurately; work with squares, cubes, roots and the order of operations. **Algebraic proficiency: tinkering part** *How can expressions be changed and used?* Expand a bracket by multiplying each term; substitute positive values into expressions and formulae; use multi-step function machines.	**Calculating fractions, decimals and percentages** *How do we calculate with fractions?* Add, subtract, multiply and divide proper, improper and mixed fractions; apply fraction calculations to problems involving area, perimeter and averages. **Solving equations and inequalities** *How can we find an unknown number?* Find pairs of values that satisfy simple equations; solve one-step, two-step and multi-step equations, including equations with brackets. **Presentation of data** *Which chart tells the story clearly?* Construct and interpret pictograms, bar charts, comparative bar charts and vertical line charts; choose suitable ways to represent data.
	Disciplinary knowledge/skills	Reason with number facts, explain written methods and make accurate measurements and constructions.	Compare and round numbers, assess whether answers are reasonable and use properties of 2D and 3D shapes.	Organise and compare data, interpret fractions and use ratio to solve everyday problems.	Use percentage reasoning and apply calculations with positive and negative numbers.	Recognise patterns, manipulate and evaluate expressions, and explain the steps used in calculations.	Calculate with fractions, solve equations and present and interpret information in suitable charts.
	New vocabulary	Factor Multiple Prime HCF LCM Square number Cube number Power Root Operation Place value Decimal Divisibility Product Quotient Bracket Point Line Ray Line segment Angle Degree Protractor	Integer Inequality Round Decimal place Significant figure Estimate Parallel Perpendicular Triangle Quadrilateral Net Face Edge Vertex	Data Sample Population Frequency Mean Median Mode Range Numerator Denominator Equivalent Improper Mixed number Terminating Recurring Ratio Proportion Simplify Multiplier Unit price Part-to-part	Percentage Fraction Decimal Increase Decrease Compare Negative number Integer Number line Zero Addition Subtraction	Variable Symbol Expression Term Function Input Output Like terms Positive Negative Product Quotient Power Square Cube Root Expand Bracket Distribute Substitute Formula Function	Proper fraction Improper fraction Mixed number Denominator Reciprocal Equation Unknown Solve Solution Inverse Bracket Pictogram Bar chart Vertical line chart Comparative Scale Axis