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

		Autumn Term		Spring Term		Summer Term	
Year 8 Stage 8	**Topic** **Big question / Overview**	**Numbers and the number system** *How can numbers be written efficiently?* Use prime factorisation to find highest common factors and lowest common multiples; round to significant figures; express very large and small numbers in standard form. **Calculating space** *How can we measure different shapes?* Calculate area and perimeter of plane shapes, volume of cuboids, and surface area of cuboids and triangular prisms; explore line and rotational symmetry. **Presentation of data** *How should information be displayed?* Construct and interpret pictograms, bar charts and vertical line charts; choose suitable charts and compare sets of data.	**Understanding risk** *How can we measure chance?* Use the probability scale from 0 to 1, list possible outcomes and calculate probabilities; organise outcomes using tables and frequency trees. **Algebraic proficiency: tinkering** *How can algebra be simplified?* Simplify and factorise expressions, apply the laws of indices, substitute positive and negative values, and rearrange formulae to make a different variable the subject.	**Compound measures** *How are different measures connected?* Calculate speed, density and pressure, including average speed; convert between compound units and use ratio tables to solve practical problems. **Pattern sniffing** *How can we describe a number pattern?* Generate linear and non-linear sequences, identify term-to-term and nth-term rules, and investigate arithmetic, square, cube and Fibonacci-type sequences.	**Mathematical movement** *How can a shape be transformed?* Use coordinates in four quadrants and describe reflections, translations and rotations; enlarge shapes using a positive scale factor and identify congruence or similarity. **Solving equations and inequalities** *How do we solve equations with two sides?* Solve linear equations involving brackets, negative numbers and fractional answers, including unknowns on both sides; connect equations with intersections on graphs.	**Calculating space** *What can we calculate about circles?* Use circle vocabulary to calculate circumference and area; find volumes of prisms and cylinders and measure composite shapes containing circular sections. **Investigating angles** *What rules help us find missing angles?* Use angles at a point, on a straight line and in parallel lines; calculate interior and exterior angles of triangles and other polygons.	**Measuring data - grouped** *What can grouped data tell us?* Organise continuous data in grouped frequency tables; identify modal and median classes, estimate means and ranges, and judge which statistics best describe data.
	Disciplinary knowledge/skills	Select efficient number methods, justify estimates and apply formulae to measurements and charts.	Reason about probability and simplify algebraic expressions, using correct notation.	Use proportional reasoning with measures and generalise number sequences.	Describe geometrical transformations and solve equations with clear working.	Apply circle formulae and explain solutions using suitable units.	Use angle rules to justify results and interpret grouped statistical information.
	New vocabulary	Prime factor Prime number HCF LCM Significant figure Estimate Standard form Area Perimeter Symmetry Parallelogram Trapezium Volume Surface area Prism Pictogram Bar chart Pie chart Vertical line chart Frequency Scale Comparative chart	Probability Outcome Event Impossible Certain Theoretical probability Frequency tree Expression Variable Coefficient Factorise Indices Substitute Subject Formula	Compound measure Speed Average speed Distance Time Density Pressure Unit Sequence Term Arithmetic Linear Non-linear Nth term Fibonacci Geometric	Coordinate Quadrant Reflection Rotation Translation Vector Enlargement Scale factor Congruent Equation Unknown Linear Inverse Bracket Solution Intersection	Circle Radius Diameter Circumference Chord Pi Cylinder Composite shape Vertically opposite Alternate Corresponding Parallel Interior angle Exterior angle Polygon	Discrete Continuous Class interval Grouped frequency Modal class Median Estimated mean Range