

Subject: Year 8 Maths

Year 8 Curriculum Intent: The Year 8 maths curriculum at The Kingsway School aims to provide students with the skills to become fluent in the fundamentals of mathematics, through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately. The Year 8 curriculum builds directly on students' progress from year 7 through a mastery and problem-solving approach. Mathematical concepts are explored through small steps developed from the White Rose scheme of learning to allow students to fully understand each element and avoid cognitive overload and repetition of rote methods. Students will be given the opportunity to solve problems every lesson through both independent and group tasks. The aim of year 8 is to build on prior skills through using existing knowledge in different contexts and applications with an increased focus on algebraic techniques including graphing and proportional reasoning. These skills are also embedded through revisiting them in both geometry where π is introduced and reasoning with data. By the end of year 8 the maths department aims to ensure all students are able to apply their correct numerical thinking to problems involving proportion and are beginning to use algebraic techniques to solve problems in a variety of contexts across the curriculum.

	Scheme 1: Proportional Reasoning	Scheme 2: Representations	Scheme 3: Algebraic Techniques	Scheme 4: Developing Number	Scheme 5: Developing Geometry	Scheme 6: Reasoning with Data
Acquire	Ratio notation. Circumference of a circle formula. Scale factors and currency conversion. Direct proportion relationships. Fractional multiplication and division.	Coordinates, axes and straight-line graphs. Equation of a straight line. Scatter graphs, correlation and line of best fit. Grouped and ungrouped, discrete and continuous data. Two-way tables. Sample space diagrams. Venn diagrams.	Expand and factorise expressions Expressions, equations, formulae, identities and inequalities. Linear and non-linear sequences. Addition and subtraction index laws.	Percentage multipliers. Ordinary and standard form. Metric measures and units. Estimation. Order of operations.	Parallel line and angles. Geometric notation Sum of interior and exterior angles of polygons. Area of shapes covered in year 7. Area of a trapezium and circle. Area of compound shapes. Significant figures. Line symmetry and reflection.	Primary and secondary sources of data. Pie charts, bar charts and questionnaires. Median and mean. Mode and modal class.
Apply	Understand ratio and its link to multiplication. Use ratio notation. Reduce ratios to simplest form. Solve ratio problems. Calculate the circumference of a circle. Use scale factors, linking to ratio, to solve simple direct proportion problems. Convert between currencies, including using graphs.	Plot and interpret straight line graphs. Understand and 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.	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. Generate sequences using more complex rules, e.g. with brackets and squared	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. Convert between numbers in ordinary and standard form.	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. Calculate the area of a trapezium.	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.

	<p>Draw and interpret scale diagrams and maps. Multiply and divide a fraction by an integer. Multiply and divide a fraction by a fraction. Understand and use the reciprocal.</p>	<p>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. List outcomes using sample space diagrams for one and two events. Find probabilities using tables and Venn diagrams.</p>	<p>terms, both in words and algebraically. Form expressions using indices. Understand and use the addition and subtraction rules.</p>	<p>Compare numbers given in standard form. Calculate with numbers given in standard form, with and without a calculator. Develop mental strategies. Convert between metric measures and units. Estimation, including rounding to a given number of decimal places. Use the order of operations.</p>	<p>Calculate the area of a circle, and the area of parts of a circle. Use significant figures. Calculate the area of compound shapes. Recognise line symmetry in polygons and other shapes. Reflect shapes in horizontal, vertical and diagonal lines.</p>	<p>Identify misleading graphs. 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.</p>
Vocabulary	<p>Ratio Proportion Multiplier Factors Equivalent Scale Denominator Numerator Perimeter Circumference Diameter Gradient Linear Variable</p>	<p>Quadrant Coordinates Horizontal Vertical Parallel Substitute Intercept Incline Descending Ascending Input Output Equidistant Segment</p>	<p>Expression Simplify Term Coefficient Solve Positive Negative Expand Bracket Identity Factorise Like terms Binomial Quadratic</p>	<p>Approximation Conversion Percent Integer Invest Standard (index) Form Commutative Base Exponent Indices Significant Round Estimate Balance Deposit:</p>	<p>Parallel Angle Transversal Isosceles Polygon Regular Congruent Perimeter Pi (π) Perpendicular Sector Line of symmetry Reflect Vertex</p>	<p>Hypothesis Sampling Primary Data Secondary Data Discrete Continuous Average Proportion Spread Frequency Outlier Consistent</p>
Assessment	<p>Ratio and scale Milestone Multiplying and dividing fractions Milestone Low stakes skills check to assess acquisition of key skills.</p>	<p>Cartesian plane Milestone Representing data Milestone Low stakes skills check to assess acquisition of key skills.</p>	<p>Brackets, equations and inequalities Milestone Indices Milestone Low stakes skills check to assess acquisition of key skills.</p>	<p>Fractions and percentages Milestone Standard index form Milestone Low stakes skills check to assess acquisition of key skills.</p>	<p>Angles in parallel lines and polygons Milestone Key Milestone covering topics from all previous milestones. Low stakes skills check to assess acquisition of key skills.</p>	<p>Data handling cycle Milestone Measures of location Milestone Low stakes skills check to assess acquisition of key skills.</p>