

Subject: Year 9 Maths

Year 9 Curriculum Intent: The Year 9 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 9 curriculum builds directly on students' progress from year 8 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 9 is not only to embed all prior skills but also to link them together to enable students to access and reason with complex mathematical problems especially those involving geometrical concepts new to the students. By the end of year 9, in addition to the learning accomplished in years 7 and 8, the maths department aims to ensure students are able to independently reason with number, including proportion, and algebra along with knowledge of algebra facts and how to prove them.

	Scheme 1: Reasoning with Algebra	Scheme 2: Constructing in 2 and 3 Dimensions	Scheme 3: Reasoning with Number	Scheme 4: Reasoning with Geometry	Scheme 5: Reasoning with Proportion	Scheme 6: Representations & Revision
Acquire	Equation of a straight-line graph. Linear sequences. Inequalities with unknowns on both sides. Subject of the formula.	2D and 3D shapes. Properties of 3D shapes, including faces, edges and vertices. Common prisms and non-prisms. Volume and surface area of cuboids and cylinders. Volume and surface area of any prism. Congruency. Locus.	Rational and real numbers Fraction arithmetic. HCF and LCM. Standard form. Percentage change. Reverse percentages.	Angles rules, including within special quadrilaterals. Order of rotational symmetry. Translation vectors. Pythagoras' theorem.	Positive scale factor enlargement. Similar shapes. Conversion graphs. Inverse proportion. Unit Pricing. Speed, distance and time relationship. Mass, density and volume relationship.	Relative frequency. Dependent and independent events. Quadratic, reciprocal and piecewise graphs. Inequalities.
Apply	Interpret straight line graphs. Find and use the equation of a straight line. Reduce equations to the form $y = mx + c$. Compare to linear sequences and finding the rule for the n^{th} term. Revisit and extend to equations and inequalities with unknowns on both	Understand the language of faces, edges and vertices. Know the names of common prisms and non-prisms. Identify 2-D shapes within 3-D shapes. Work out the volume and surface area of cuboids and cylinders.	Use rational and real numbers. Extend knowledge of HCF and LCM, standard form. Use percentages over 100%. Find percentage changes. Use multipliers in a variety of contexts.	Find angles using algebraic methods. Use chains of reasoning to evaluate angles. Identify the order of rotational symmetry of a shape. Find the result of rotating a shape. Translate points and shapes by a given vector.	Enlarge shapes by a positive scale factor, including from a given point. Calculate the lengths of missing sides in similar shapes. Direct proportion problems and graphs. Conversion graphs. Solve ratio problems given the whole or a part.	Relative frequency. Expected number of outcomes. Independent events. Drawing and reading from quadratics. Interpreting other graphs e.g. reciprocal, piecewise Representing inequalities.

	sides using all previous contexts: angles, probability, area etc. Change the subject of a formula. Test conjectures in a wide range of context e.g.	Work out the volume of any prism. Work out missing lengths given area and/or volume. Construct 3-D shapes from nets, and construct the net of a given 3-D shape. Construct and use scale drawings. Construct perpendiculars and bisectors. Understand congruency. Exploring congruency via construction.	Solve “reverse percentage” problems. Explore financial mathematics including: <ul style="list-style-type: none"> • Bills and bank statements • Interest • Unit pricing (best buys) 	Understand variance and invariance in the context of transformations. Identify the hypotenuse of a right-angled triangle. Determine whether a triangle is right-angled. Calculate missing sides in right-angled triangles.	Simple inverse proportion. Unit pricing problems (‘best buys’). Work with speed, distance, time. Solve problems involving density. Work with compound units.	
Vocabulary	Gradient Intercept Linear Asymptote Reciprocal Perpendicular Inequality Variable Rearrange Inverse operation Substitute HCF: highest common factor LCM: lowest common multiple Verify Proof Binomial Quadratic	Vertex Face Cross-section Plan Perspective Locus Equidistant Discorectangle Arc Bisector Congruent	Integer Rational Irrational Quotient Product Multiples Factor Equivalent Reduce Growth Invest Multiplier Profit Credit Debit Balance Expense Deposit Per Annum	Parallel Transversal Conjecture Equation Polygon Counterexample Rotate Invariant Vertex Square number Square root Hypotenuse Opposite Adjacent	Similar Shapes Scale Factor Enlarge Corresponding Image Direct proportion Inverse proportion Convert Mass Origin Volume Substitute	Probability Relative Frequency Chance Event Biased Cubic Parabola
Assessment	Straight Line Graphs Milestone Forming & Solving Equations Milestone	Testing Conjectures Milestone Three-Dimensional Shapes Milestone	Numbers Milestone Percentages Milestone Low stakes skills check to assess acquisition of key skills.	Deduction Milestone Rotation & Translation Milestone	Pythagoras' Theorem Milestone Enlargement & Similarity Milestone	End of year exam covering topics from all previous milestones. Probability Milestone

	Low stakes skills check to assess acquisition of key skills.	Low stakes skills check to assess acquisition of key skills.		Low stakes skills check to assess acquisition of key skills.	Low stakes skills check to assess acquisition of key skills.	Low stakes skills check to assess acquisition of key skills.
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