

	DEVELOP FLUENCY	REASON MATHEMATICALLY	SOLVE PROBLEMS
MASTER	Use mathematical language and properties precisely. Move fluently between different numerical, algebraic, graphical and diagrammatic representations. Develop algebra skills including expressions involving surds, algebraic fractions, inequalities and simultaneous equations.	Create and test conjectures about generalisations that underlie patterns and relationships; look for proofs or counter-examples; begin to use algebra to support arguments.	Select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems. Model situations mathematically and express the results using a range of formal mathematical representations reflecting on how their solutions may have been affected by any modelling assumptions.
EXPERT	Consolidate and extend understanding of algebraic simplification and manipulation to include quadratic expressions. Identify and apply appropriate calculation strategies to solve problems including the use of standard form and application and interpretation of limits of accuracy.	Begin to construct mathematical arguments using algebraic notation. Formulate proportional relationships algebraically. Develop skills to prove conjectures.	Make and use connections between different parts of mathematics to identify relevant processes and solve problems. Interpret solutions in the context of the given problem.
PROFICIENT	Improve understanding to enable a student to select and use appropriate calculation strategies to solve increasingly complex problems including exact calculations involving multiples of π. Extend understanding of decimals, fractions, powers, roots including with mathematical operations.	Be able to identify variables and express relations between variables algebraically and graphically. Develop skills allowing deductive reasoning in geometry, number and algebra. Interpret and apply skills to problem solve including proportional reasoning. Extend knowledge of inference into statistical settings.	Develop mathematical knowledge, in part through solving problems and evaluating the outcomes, involving multi-step problems.
COMPETENT	Use language and properties to analyse numbers, algebra, 2D and 3D shapes. Develop fluency with graphs and algebra, including understanding linear functions.	Make connections between graphical representations and algebraic equations. Connect and apply knowledge of different mathematical concepts including use of ratio and proportion within measures and geometry. Extend knowledge of conjectures allowing counterexamples to be identified and tested. Explore inference in probabilistic settings.	Select appropriate concepts, methods and techniques to apply to familiar and routine problems.
SECURE	Knowledge developed enables a student to be able to change between different numerical, algebraic, graphical and diagrammatic representations including of linear and quadratic functions.	Develop algebraic understanding to allow knowledge to be applied across a range of topics including geometry, number, ratio and proportion. Make and test conjectures about patterns and relationships. Begin to reason deductively in geometry and number. Develop multiplicative and proportional reasoning to improve problem solving skills.	Model situations and express the results using a range of formal mathematical representations.
DEVELOPING	Develop algebraic understanding to include substitution, rearranging, solving and simplify expressions. Begin to create algebraic expressions to aid problem solving.	Expand knowledge of algebraic terms including the use of variables. Begin to understand the meaning of ratio and proportion and apply it in context. Apply understanding to begin testing conjectures with patterns and sequences. Look at the number system and begin to make connections between number relationships linking to algebraic notation.	Develop knowledge to solve simple problems, including in financial contexts and those with multiple steps.
EMERGING	Identify strategies to problem solve. Develop understanding to include decimals and fractions. Consolidate numerical and mathematical knowledge from KS2.	Solve worded problems by successfully identifying and applying mathematical operations. Explore worded problems to identify which mathematical operations are required.	Develop mathematical knowledge, through solving simple problems.