Mathematics	Y11 Foundation	Chapter 20 (N1, A3, A5, A6, A9, A10, A12, A14, A19, A21, A22, R10, R14)	The Bigger Picture: Graphs and simultaneous equations	Lessons 15

Essential Knowledge	Teaching Points
• Know the difference between an equation and an identity and use and understand the ≠ symbol; • Change the subject of a formula involving the use of square roots and squares; • Answer 'show that' questions using consecutive integers (n, $n + 1$), squares a^2, b^2, even numbers $2n$, and odd numbers $2n + 1$; • Solve problems involving inverse proportion using graphs, and read values from graphs; • Find the equation of the line through two given points; • Recognise, sketch and interpret graphs of simple cubic functions; • Recognise, sketch and interpret graphs of the reciprocal function $y = \frac{1}{x}$ with $x \neq 0$; • Use graphical representations of inverse proportion to solve problems in context; • identify and interpret the gradient from an equation $ax + by = c$; • Write simultaneous equations to represent a situation; • Solve simultaneous equations (linear/linear) algebraically and graphically; • Solve simultaneous equations representing a real-life situation, graphically and algebraically, and interpret the solution in the context of the problem	• Emphasise the need for good algebraic notation. • Model step by step how to solve simultaneous equations and show students how to check their answers are correct • Deter students away from using trial and error to solve simultaneous equations so this is the least efficient method • Provide students with all graphs they will need to recognise and highlight the similarities and differences in relation to the index powers • Graphs needed: linear y=mx+c, quadratic positive and negative, cubic positive and negative, reciprocal
Assumed Prior Knowledge/ Links / Interleaving	
• Students should be able to draw linear graphs. • Students should be able to plot coordinates and sketch simple functions with a table of values. • Students should be able to substitute into and solve equations. • Students should have experience of using formulae. • Students should recall and use the hierarchy of operations and use of inequality symbols.	

Potential Barriers to Access /Misconceptions	Opportunities for Reasoning/Problem Solving/Proofs
• The effects of transforming functions are often confused	• Simple simultaneous equations can be formed and solved from real life scenarios, such as, 2 adult and 2 child tickets cost £18, and 1 adult and 3 child tickets costs £17. What is the cost of 1 adult ticket?

Key Mathematical Vocabulary	Reciprocal, linear, gradient, functions, direct, indirect, estimate, cubic, subject, rearrange, simultaneous, substitution, elimination, proof