Mathematics	Y10 Foundation	Chapter 9b (A7, A9, A10, A12, A17)	The Bigger Picture: Straight line graphs	Lessons 12

Essential Knowledge	Teaching Points
• Use function machines to find coordinates (i.e. given the input x, find the output y); • Plot and draw graphs of $y = a$, $x = a$, $y = x$ and $y = -x$; • Recognise straight-line graphs parallel to the axes; • Recognise that equations of the form $y = mx + c$ correspond to straight-line graphs in the coordinate plane; • Plot and draw graphs of straight lines of the form $y = mx + c$ using a table of values; • Sketch a graph of a linear function, using the gradient and y-intercept; • Identify and interpret gradient from an equation $y = mx + c$; • Identify parallel lines from their equations; • Plot and draw graphs of straight lines in the form $ax + by = c$; • Find the equation of a straight line from a graph; • Find the equation of the line through one point with a given gradient; • Find approximate solutions to a linear equation from a graph;	• Clear presentation of axes is important. • Ensure that you include questions that include axes with negative values to represent, for example, time before present time, temperature or depth below sea level. • Careful annotation should be encouraged: it is good practice to get the students to check that they understand the increments on the axes. • Emphasise the importance of drawing a table of values when not given one. • Values for a table should be taken from the x-axis. • Encourage students to write out set of coordinates from table of values before attempting to draw the graph

Assumed Prior Knowledge/ Links / Interleaving	
• Students should be able to substitute into a formula • Students should be able to plot coordinates and read scales	

Potential Barriers to Access /Misconceptions	Opportunities for Reasoning/Problem Solving/Proofs
• When not given a table of values, students rarely see the relationship between the coordinate axes.	• Students should be able to decide what the scales on any axis should be to be able to draw a correct graph. • Without drawing, explain the key features of the graph $y = 2x - 4$. • Which of these lines are parallel, how do you know? $y = 2x + 3$, $y = 5x + 3$, $y = 2x - 9$, $2y = 4x - 8$

Key Mathematical Vocabulary	Linear, graph, distance, time, coordinate, quadrant, real-life graph, gradient, intercept, function, solution, parallel