The Sutton Academy

Knowledge Rich Curriculum Plan

Year 11 Foundation+ Algebra 2

Lesson Objective	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this, students need to already know that…*	Assessment
To learn how to solve problems using the nth term of a linear sequence	• Students will know how to generate both linear and quadratic sequences using the nth term. • Students will know how to use the nth term of an arithmetic sequence to decide if a given number is a term in the sequence. • Students will know how to solve problems involving sequences from real life situations • Students will know how to find the first term greater/less than a certain number	**Sequence** - a particular order in which related things follow each other. **Generate –** produce or create. **Linear or Arithmetic Sequence** - A number pattern which increases (or decreases) by the same amount each time **Geometric Sequence –** a sequence made by multiplying by the same value each time **Nth Term –** a formula that enables us to find any term in a sequence. The ' n ' stands for the term number **Quadratic –** involving a squared algebraic term but no other power higher than 2 **Substitute –** use or add in place of	• Students will need to know how to substitute positive and negative numbers into formulae from mathematics.	
To learn how to draw straight line graphs	• Students will know how to complete a table of values and plot graphs in the form y = mx + c • Students will know how to plot straight line graphs in the form y = mx + c by first constructing their own table of values • Students will know how to plot and draw graphs of straight lines in the form x + y = c	**Substitute –** use or add in place of	• Students will know how to plot and draw graphs of y = a, x = a, y = x and y = –x, drawing and recognising lines parallel to axes. • Students will know how to draw y = x and y = -x	
To learn how to interpret the equation of a straight line and calculate gradient	• Students will know how to identify the gradient and y-intercept of a straight line given the equation including where rearrangement is required • Students will know how to calculate gradient between two pairs of coordinates. • Students will know that $gradient = \frac{change\ in\ y}{change\ in\ x}$ • Students will know how to find the equation of a straight line •	**Gradient** – steepness. The gradient of a line tells us how steep the line is. **Intercept** – cross **Y-intercept** – the y-intercept tells us where a graph crosses the y-axis, this where x = 0 **X-intercept** – the x-intercept tells us where a graph crosses the x-axis, this where y = 0	• Students will need to know how to rearrange formulae • Students will know how to calculate the difference between values	
To learn how to find the equation of a straight line from coordinates and find the equation of parallel lines	• Students will know how to determine the equation of a straight line from two pairs of coordinates • Students will know that parallel lines have the same gradient • Students will know how to find the equation of a straight line that is parallel to another given line • Students will know how to solve more complex problems involving parallel lines	**Parallel –** parallel lines are two lines that are side by side and have the same distance continuously between them.	• Students will need to know how to calculate gradient • Students will need to know how to solve linear equations in the form a + x = c where a and c are integers or fractions •	
To learn how to solve linear simultaneous equations	• Students will know how to solve linear simultaneous equations graphically • Students will use elimination to solve basic linear simultaneous equations algebraically • Students will know how to use elimination to solve linear simultaneous equations algebraically including where both need multiplying.	**Simultaneous –** occurring, operating, or done at the same time. **Simultaneous equations –** equations involving two or more unknowns that are to have the same values in each equation. **Linear Equation –** an equation between two variables that can be written in the form y = mx + c. Linear	• Students need to know how to solve linear equations • Students need to know how to substitute numbers into formulae	

Lesson Objective	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this, students need to already know that…*	Assessment
		equations give a straight line when plotted on a graph.		
To learn how to solve linear simultaneous equations	• Students will use elimination to solve basic linear simultaneous equations algebraically • Students will know how to use elimination to solve linear simultaneous equations algebraically including where both need multiplying. • Students will know how to form and solve linear simultaneous equations		• Students need to know how to solve linear equations • Students need to know how to substitute numbers into formulae	
To learn how to draw quadratic graphs **Include interpreting quads in this lesson.**	• Students will know how to recognise graphs of quadratic functions • Students will know how to generate points and plot graphs of quadratic functions both with and without a calculator	**Quadratic –** An expression or equation where the highest power is 2. **Parabola –** the U or ∩ shape of a quadratic graph	• Students will know how to substitute positive and negative integers into formulae involving squared terms without a calculator	
To learn how to solve quadratics by factorising	• Students will know how to solve quadratic equations by factorising where the coefficient of x^2 is 1.	**Solve –** find an answer **Equation –** A mathematical statement that two amounts, or groups of symbols representing an amount **Factorise –** put back into brackets by bringing common factors outside **Quadratic Equation –** an equation involving a squared algebraic term but no other power higher than 2	• Students will need to know how to factorise quadratic equations where the coefficient of x^2 is 1.	
To learn how to recognise and draw quadratic, cubic and reciprocal graphs	• Students will know how to recognise and sketch simple cubic functions. • Students will know how to recognise and sketch graphs of the reciprocal function $y=1/x$ with $x \neq 0$ • Students will know how to recognise and sketch graphs of exponential functions. • Students will know how to complete a table of values and plot reciprocal graphs with and without a calculator. • Students will know how to complete a table of values and plot a cubic function. • Students will know how to interpret graphs of simple cubic functions, including finding solutions to cubic equations. • Students will know how to recognise the shape of different graphs and match equations to sketches.	**Cubic –** Of the third power, order, or degree. In maths a cubic function is one involving a cubed algebraic term but no other power higher than 3. **Reciprocal –** The reciprocal of a number is: 1 divided by the number **Function –** a relation or expression involving one or more variables	• Students will know how to substitute positive and negative numbers into formulae from mathematics. • Students will know how to plot coordinates in all four quadrants.	