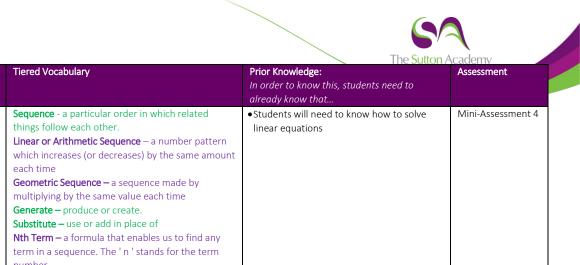




Knowledge Rich Curriculum Plan

Year 9 Prime – Sequences and Graphs





sequence	 Students will understand the relationship between the nth term of a sequence and the terms in a sequence, for example a '2n' sequence goes up in 2s etc Students will know how to find the nth term of a linear sequence Students will know how to find the nth term of a pattern sequence. Students will know how to identify whether a term can be in a sequence given its nth term by forming and solving a linear equation Students will know how to find and use the nth term to determine whether a number will be in a linear sequence 	 unear or Antimetic 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 Generate – produce or create. Substitute – use or add in place of Nth Term – a formula that enables us to find any term in a sequence. The 'n' stands for the term number 		
To learn how to draw straight line graphs	 Students will know how to plot straight line graphs in the form y = mx + c by first completing a given table of values Students will know how to plot straight line graphs in the form y = mx + c by constructing their own table of values Students will know how to plot and draw graphs of straight lines in the form x + y = c Opportunity for Challenge: Students will know how to plot and draw graphs of straight lines in the form ax + by = c 	Substitute – use or add in place of Quadrant – one of the four quarters of the coordinate plane	•Students should already know how to plot and draw graphs that are parallel to either the x- or y-axis (equations in the form y = a, x = a)	Mini-Assessment 4
To learn how to find the equation of a straight line	 Students will know how to identify the gradient and y-intercept of a straight line given the equation. Students will know how to calculate gradient between two pairs of coordinates. Students will know that gradient = change in y change in x Students will know that the equation of a straight line can be written in the form y = mx + c where m tells us the gradient of the line and c tells us the y-intercept. Students will know how to find the equation of a given straight line. 	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 Gradient – steepness. The gradient of a line tells us how steep the line is.	• Students need to know how to write coordinates	Mini-Assessment 4
To learn how to find the equation of a straight line	 Students will know how to find the equation of a straight line given the gradient and a coordinate in the form (x, y) where the x-coordinate is 0 Students will know how to find the equation of a straight line given the gradient and a coordinate in the form (x, y) where x and y take any integer values Students will know how to find the equation of a line between two pairs of coordinates by first calculating the gradient between the two points 		 Students will need to know how to calculate gradient Students will need to know how to substitute numbers into formulae 	Mini-Assessment 4
To learn how to find the equation of parallel lines	 Students will know that parallel lines have the same gradient Students will know how to find the equation of any straight line that is parallel to another given line Students will know how to find the equation of a particular straight line that is parallel to another given line and passes through a certain coordinate Opportunity for Challenge: 	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 	Mini-Assessment 4

Lesson Objective

To learn how to generate a

sequence from the nth term

and find the nth term for a

Intended Knowledge:

Students will know that...

• Students will know how to generate a linear sequence using the nth term

• Students will know how to generate a quadratic sequence from its nth term

•Students will understand the relationship between the nth term of a sequence and



			The Sutton Academy					
Lesson Objective	Intended Knowledge: Students will know that	Tiered Vocabulary	Prior Knowledge: In order to know this, students need to already know that	Assessment				
	• Students will know how to solve more complex problems involving finding the equation of parallel lines							
To learn how to solve linear simultaneous equations	 Students will know how to solve linear simultaneous equations or find estimates to their solutions given two straight lines drawn on a graph Students will know how to draw two straight lines to identify the point of intersection to solve two simultaneous equations Students will know how to use elimination to solve linear simultaneous equations algebraically 	Intersection – a point at which two or more things cross 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 equations give a straight line when plotted on a graph.	•Students will need to know how to calculate with negatives	Mini-Assessment 4				
To learn how to solve linear simultaneous equations	 Students will know how to use elimination to solve linear simultaneous equations algebraically Students will know how to solve linear simultaneous equations representing a real-life situation and interpret the solution in the context of the problem 		•Students will need to know how to solve linear equations	Mini-Assessment 4				
To learn how to draw quadratic graphs	 Students will know how to generate points for a simple quadratic graph without a calculator Students will know how to use a calculator to generate points for a quadratic graph in the form y = ax² + bx + c where a = 1 and b and c are any integer including 0 Students will know how to plot a quadratic graph once they have generated the points Students will know that the points for a quadratic graph should be joined with a smooth curve Students will know how to use a calculator to generate points for a quadratic graph in the form y = ax² + bx + c where a ≠ 1 and b and c are any integer including 0 	Quadratic – An expression or equation where the highest power is 2. Parabola – the U or ∩ shape of a quadratic graph	 Students will need to know how to calculate with negative numbers without a calculator Students will need to know how to square negative numbers without a calculator Students will need to know how to substitute both positive and negative integers into formulae without a calculator 	Mini-Assessment 4				
To learn how to draw quadratic graphs and find roots and turning points	 Students will know how to recognise graphs of quadratic functions. Students will know how to generate points and plot graphs for quadratic functions, with and without a calculator. Students will know how to identify the line of symmetry of a quadratic graph Students will know how to find approximate and exact solutions to quadratic equations by identifying the roots of a graph Students will know how to identify the turning point for a drawn quadratic graph. Opportunity for Challenge: Students will know how to find approximate and exact solutions to quadratic graph. Opportantity for challenge: Students will know how to find approximate and exact solutions to quadratic equations in the form ax² + bx + c = d where d is an integer or decimal number by drawing a suitable horizontal straight line 	Quadratic – An expression or equation where the highest power is 2. Symmetry – A shape or object has symmetry if it can be divided into 2 or more identical pieces. Turning Point – The point at which the gradient changes of a curve (the maximum or minimum point on a curve). Root – A solution to an equation where a line or curve crosses the x-axis. Parabola – the U or ∩ shape of a quadratic graph	 Students will need to know how to substitute both positive and negative numbers into equations involving squared terms 	Mini-Assessment 4				



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 factorise and solve quadratics	 Students will know how to factorise and solve quadratic equations in the form ax² + bx + c = 0 where a = 1 Students will know that in order to factorise and solve quadratic equations they must be equal to zero. Students will know how to rearrange equations to make them equal to zero before factorising and solving them Opportunity for Challenge: Students will know how to form and solve quadratic equations where the coefficient of x² is 1 	Factorise – put back into brackets by bringing common factors outside Quadratic – involving a squared algebraic term but no other power higher than 2	• Students need to be able to factorise quadratics where the co-efficient of x ² is 1	Mini-Assessment 4
To learn how to solve quadratic equations using the quadratic formula	 Students will know that the quadratic formula is x = (-b±√b²-4ac)/2a Students will know that we use the quadratic formula when a quadratic cannot be factorised Students will know how to identify the values for a, b and c from a quadratic equation including where the equation is not necessarily in the order ax² + bx + c Students will know how to substitute the values for a, b and c into the quadratic formula to solve the corresponding quadratic equation Students will know that in order to solve quadratic equations they must be equal to zero. Students will know how to rearrange equations to make them equal to zero before using the quadratic formula to solve them Opportunity for Challenge: Students will know how to form and solve quadratic equations using the quadratic formula 	Formula – A mathematical relationship or rule expressed in symbols.	 Students need to be able to use a calculator efficiently Students need to be able to substitute numbers into formulae 	Mini-Assessment 4