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 find the nth term of a linear sequence	• 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 solve problems involving sequences from real life situations. • 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.	**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	• Students will need to know how to continue sequences including patterns and quadratic sequence • Students will need to know how to describe the term-to-term rule for a sequence	
To learn how to draw straight line graphs	• Students will need to 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 • 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 graphs in the form y = mx + c • Students will know how to draw straight line graphs in the form y = mx + c by using a table of values. • 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 **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 **Substitute –** use or add in place of **Coordinate –** two numbers or sometimes a letter and a number, that locate a specific point on a grid. They are written in the form (x, y) most commonly. **Vertical –** something that is vertical stands or points straight up **Horizontal –** something that is arranged sideways, parallel to the horizon, like a person lying down **Quadrant –** one of the four quarters of the coordinate plane	• Students will need to know how to plot coordinates • Students will need to know how to substitute into formulae • 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 find the equation of a straight line Needs 2 lessons!	• Students will know how to identify the gradient and y-intercept of a straight line given the equation. • Students will know that $gradient = \frac{change\ in\ y}{change\ in\ x}$ • 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	**Gradient** – steepness. The gradient of a line tells us how steep the line is.	• Students need to know how to write coordinates	
To learn how to solve linear simultaneous equations Needs 2 lessons!	• 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	**Intercept - Cross.** **Y-intercept - The y-intercept tells us where a graph crosses the y-axis, this is where $x = 0$.**	• 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	• Students will know how to recognise graphs of quadratic functions • Students will know how to generate points and plot graphs of quadratic functions with 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	

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To learn how to draw and interpret quadratic graphs	• 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 solve quadratics in the form $ax^2 + bx + c = d$ by drawing the graph of $y = d$ and reading off the values for x • Students will know how to identify the turning point for a drawn quadratic graph	**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.	• Students will know how to generate points and plot graphs of quadratic functions	
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 **Exponential –** a relation of the form $y = a^x$ **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.	