The Sutton Academy

Knowledge Rich Curriculum Plan

Year 11 Foundation – Algebra 1

Lesson/Learning Sequence	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 simplify algebraic expressions	• Students will know how to collect like terms • Students will know how to simplify algebraic expressions involving multiplication, including where the index laws need to be applied • Students will know how to simplify algebraic expressions involving division, including where the index laws need to be applied. • Students will know how to simplify algebraic expressions where the index law for brackets is required e.g. Simplify $(2x^2)^3$ • Students will know how to simplify more complex algebraic expressions using the index laws •	**Algebraic Expression –** A collection of variables and/or integers without an equals sign. It cannot be solved. **Simplify –** make (something) simpler or easier to do or understand. **Co-efficient –** a number placed before and multiplying the variable in an algebraic expression	• Students should be able to add and subtract negative numbers • Students should be able to use the index laws for multiplication with numerical bases •	
To learn how to expand single brackets	• Students will know how to expand single brackets by multiplying a single term over a bracket. • Students will know how to expand multiple single brackets and simplify the answer by collecting 'like terms'.	**Expand –** in maths, expand means multiply out	• Students will need to know how to multiply algebraic expressions • Students will need to know how to collect like terms • Students will need to know how to calculate with negative numbers	
To learn how to expand double brackets	• Students will know how to expand double brackets and simplify answers by collecting 'like terms'.		• Students will need to know how to expand single brackets • Students will need to know how to calculate with negative numbers	
To learn how to factorise expressions into a single bracket	• Students will know how to factorise algebraic expressions into single brackets	**Factorise –** put back into brackets by bringing common factors outside **Highest Common Factor** – the largest number that both or all of the numbers can be divided by	• Students need to know how to find the HCF of two numbers	
To learn how to factorise quadratics into double brackets	• Students will know how to factorise quadratics in the form $ax^2 + bx + c$ where b and c are either positive or negative and a = 1 • Students will know how to factorise the difference of two squares where the coefficient of x^2 is 1	**Quadratic –** involving a squared algebraic term but no other power higher than 2	• Students need to know how to expand double brackets • Students need to know how to calculate with negative numbers	

Lesson/Learning Sequence	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 substitute into formulae	• Students will know how to substitute positive and negative integers into formulae. • Students will know how to substitute positive and negative numbers into worded formulae. • Students will know how to substitute positive and negative numbers into kinematics formulae.	**Substitution**: the action of replacing someone or something with another person or thing. In algebra "substitution" means putting numbers where the letters are in an algebraic expression	• Students need to be able to calculate with negative numbers • Students need to able to use BIDMAS	
To learn how to solve linear equations	• Students will know how to solve simple two step linear equations with one unknown using the balancing method e.g. 2x+3 =15. • Students will be able to solve linear equations involving fractions and brackets.	**Solve –** find an answer **Equation –** A mathematical statement that two amounts, or groups of symbols representing an amount, are equal: Example 3x - 3 = 15 **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 should already know how to solve one-step equations • Students will need to know how to expand single brackets	
To learn how to solve linear equations with unknowns on both sides	• Students will know how to solve linear equations with unknowns on both sides.		• Students will need to know how to solve two step linear equations with one unknown e.g. 2x+3 =15. • Students will be able to solve linear equations involving brackets.	
To learn how to form and solve linear equations	• Students will know how to set up and solve equations for a word problem. • Students will know how to solve shape problems by forming equations		• Students will need to know how to solve linear equations • Students should know how to form expressions. • Students will need to know how to calculate perimeter and area	
To learn how to interpret inequalities and represent them on number lines	• Students will know that an inequality is a symbol >, ≤, <, ≥ that can be used to compare two values. • Students will know how to use the inequality symbols correctly • Students will know that > means greater than, ≤ means less than or equal to, < means less than and ≥ means greater than or equal to • Students will know how to list integers that satisfy an inequality e.g. -2< x <3. • Students will know how to represent inequalities on number lines. • Students will know how to write linear inequalities to represent a set shown on a number line.	**Integer –** whole number **Inequality –** a symbol which makes a non-equal comparison between two numbers or other mathematical expressions e.g. >, <, ≥ and ≤ **Satisfies –** meet the expectations, needs, or desires of	• Students should be able to use the four operations with positive and negative integers.	

Lesson/Learning Sequence	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 linear inequalities	• Students will know the solution set is the set of values that satisfy a given set of equations or inequalities. • Students will know how to solve simple linear inequalities in one variable, and represent the solution set on a number line. • Students will solve an inequality such as $-3 < 2x + 1 < 7$ and show the solution set on a number line. • Students will know how to solve two inequalities in x, find the solution sets and compare them to see which value of x satisfies both.	**Solve –** find an answer	• Students will know how to list integers that satisfy inequality e.g. $-2 < x < 3$. • Students will know how to represent inequalities on number lines. • Students will know how to construct inequalities to represent a set shown on a number line. • Students know how to solve one and two step equations.	
To learn how to rearrange formulae	• Students will know how to rearrange simple formulae to change the subject. • Students will know how to rearrange kinematic formulae. • Students will know that rearrange means change the position of. • Students will know how to change the subject of a more complicated formula involving powers and roots. • Students will know that Kinematics concerns the motion of objects,	**Rearrange –** change the position of. **Formula –** A mathematical relationship or rule expressed in symbols. Example $A=\pi r^2$	• Students should have the ability to use negative numbers with the four operations and recall and use hierarchy of operations and understand inverse operations • Students should know how to expand brackets.	